



# Tenau

TENAU ELEVATOR



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# Tenau Modern Intelligentized Factory With Internationally Advanced Manufacturing Standard

The Tenau (China) industry 4.0 production system, which was guided, planned and constructed by the German Tenau elevator group, creates new opportunities for establishment of modern intelligentized factory. Several top automatic production equipment, combined with big data and Internet of Things, can realize intelligent processing, intelligent production, intelligent detection and intelligent monitoring of industry procedures.

## Fully-automatic panel production line-Salvagnini

World top automatic equipment, automatic set-up of processing thickness without the necessity to adjust time and MAC2.0 adaptive technique to guarantee quality.

## SMT paster assembly line

SMT paster assembly line which is second to none in the industry can realize production of outer casing, interface board, power panel and communication panel with international standard.

## Industrial robot

Realize mechanical way of working, adapt to extreme environment and realize multiple tasks, like carrying, welding, and loading and unloading.



# Certificate and Engineering Projects

## Certificates



TUV-CERTIFICATE-  
ESCALATOR



TUV-CERTIFICATE-  
MOVING WALK

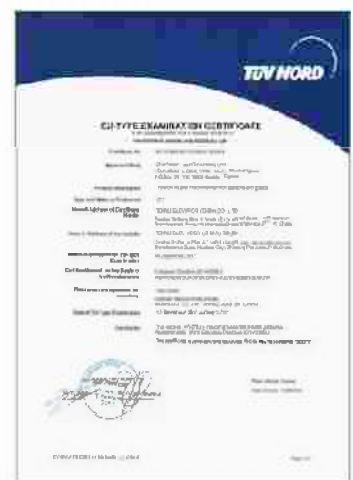
EN 115-1:2008+A1:2010



CERTIFICATE OF ENERGY  
EFFICIENCY



CERTIFICATE OF ENERGY  
EFFICIENCY



TUV-CERTIFICATE-MACHINE  
RCM-PASSENGER ELEVATOR



TUV-CERTIFICATE-MACHINE  
RCM-PASSENGER ELEVATOR

European Directive 2014/33/EU  
Harmonized Standards EN81-20:2014, EN81-50:2014

## Asia



ICON SIAM Shopping Mall, Bangkok, Thailand



TERMINAL 21 Shopping Mall, Pattaya, Thailand



Hotel Yasmin Karawaci, Indonesia



Subway project, Seoul, South Korea



Grand Kamala Lagoon, Jakarta, Indonesia



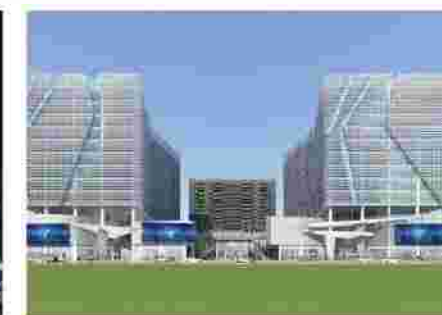
Porto de Melaka, Malacca, Malaysia



Gangshan Shopping Mall, Kaohsiung, Taiwan



Fengshan Shopping Mall, Kaohsiung, Taiwan



International Plaza, Phnom Penh, Cambodia



Zhiron Garden, Sihanoukville, Cambodia

# Certificate and Engineering Projects

## Latin America



UNITEC, Queretaro, Mexico



TOLUCA, Queretaro, Mexico



Colombia



Parque de Ocio, Bogota, Colombia



Colombia



Colombia



BPS, Montevideo, Uruguay



URQUIZA, Montevideo, Uruguay

## Russian speaking countries



Best Center, St Petersburg, Russia



Moscow Shopping Mall



Moscow Shopping Mall



Hotel, Novosibirsk, Russia



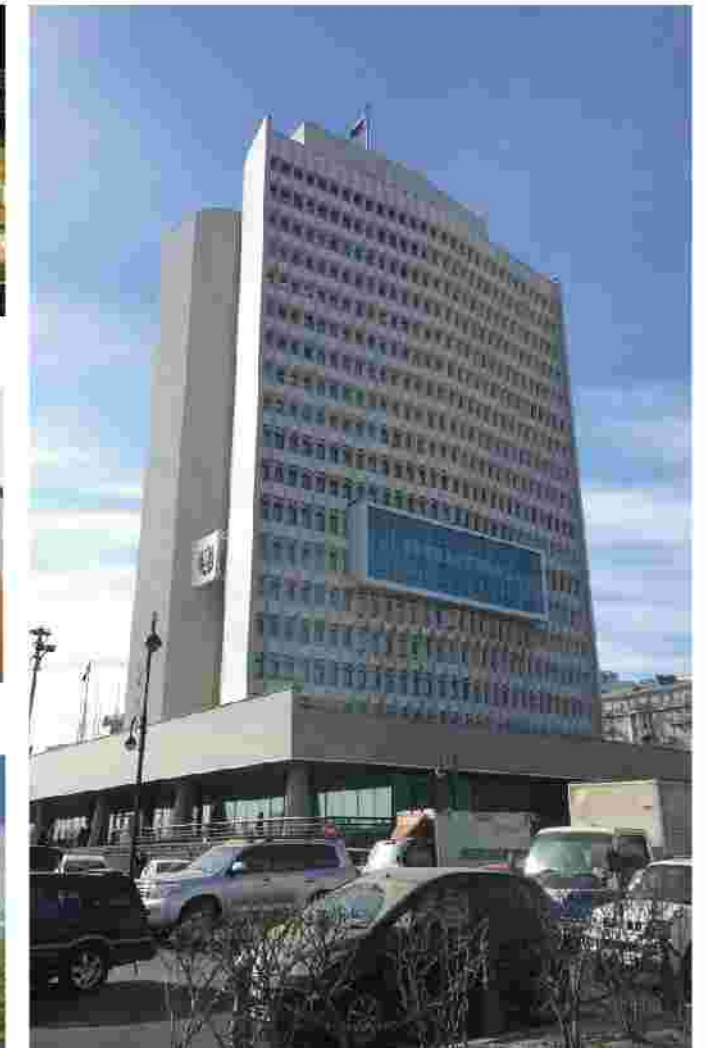
Khabarovsk Airport



Shopping Mall, Novosibirsk, Russia



Pala Group, Tbilisi, Georgia



Administration Building, Vladivostok, Russia

# Certificate and Engineering Projects

## The Middle East



Laleh Building, Mashhad, Iran



ARG Shopping Mall, Mashhad, Iran



Aftab Shopping Mall, Mashhad, Iran



Sand Rose, Dubai



Bonyad Project, Mashhad, Iran

## Africa



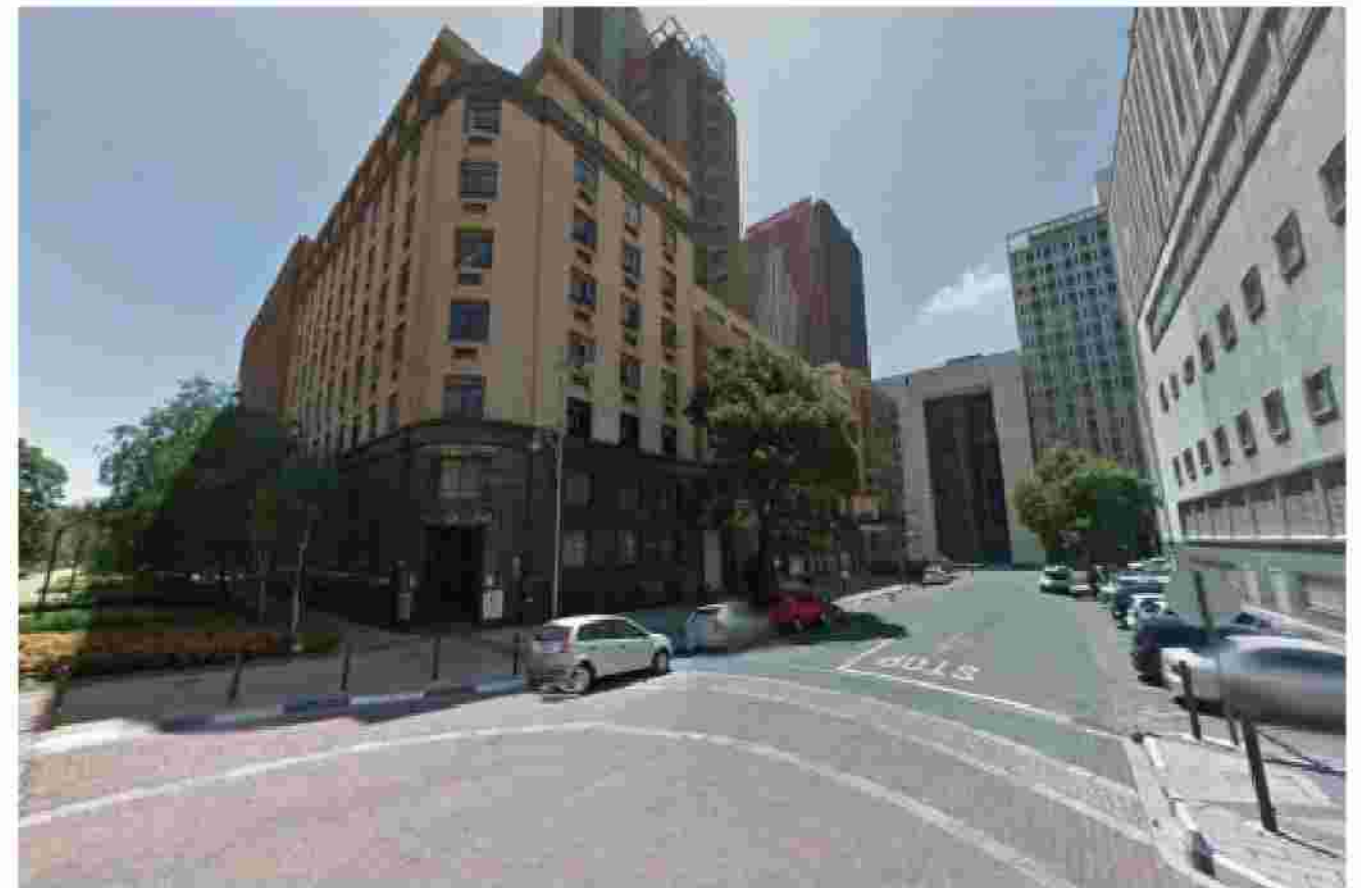
The Leo lifestyle apartments, South Africa



PalmSpring Resort, Liberia



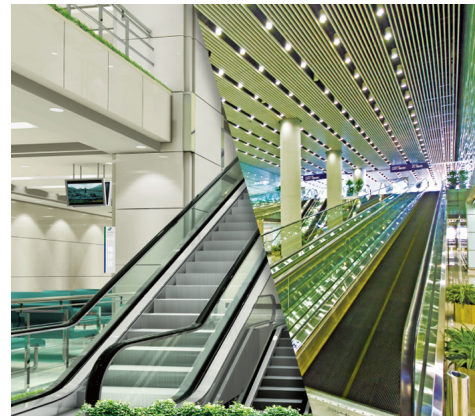
Molecular Lab Building, Banjul, Gambia



58 Main St, Johannesburg, Gauteng



# Escaleras electromecánicas



## Escalator Summary

### Urban flavor, charm scene

TENAU serial escalators fully apply the novel materials and the advanced domestic and overseas technology for design and manufacture. The escalators have the consummate structure, elaborate stairway, delicate belt, attractive outline. They are widely applicable for large passenger flow areas such as the shopping centers, supermarkets, subways, airports etc. It adds a charming mobile view for vast constructions.



The large size diameter of step roller operates minimizes the noise and prolongs the product life.

The truss is made of high-quality steel, with unique structure, high strength and nice anti-corruption durable features.



### Proper and stable running, deluxe and popular design

The overall design is concise and smooth and compatible.

The advanced international craftsmanship ensures the accuracy of steps.

The human-oriented handrail entrance is secured by brush.

Etched stainless steel front panels are available with various varieties.

The super CPU main board monitors the operation in real time. If any abnormal situation occurs, it automatically brakes and records the malfunctions code.

The super CPU main board monitors the operation in real time. If any abnormal situation occurs, it automatically brakes and records the malfunctions code.

Customer can choose VVVF control to control running speed, the energy saving performance is obvious. it can prolong product life and reduce the operation cost.



Little noise



High efficiency & energy-saving



More secure



Elegant and attractive

# Moving Walk Summary



## As easy as in smooth ground, the everlasting popular design & quality

TENAU moving walk elevates the shopping to a newly concise and comfortable realm. It not only satisfies the conveying problem of large passenger flow, but also meets the requirements of long-distance walk, carrying luggage cart, baby's cart, shopping cart, the vehicle for the handicapped etc. It is very convenient for people's outing and shopping.

## It merges with modern flavor design and style.

The stairway guiderail design with armrest fixes the whole stairway running in guiderail. It controls the stairway movement, avoids friction amid the step, skirting and comb teeth. It is convenient for installation, adjustment, repair and maintenance. It remarkably increases the running effects.

Incomparable economical: The moving walk fully utilizes advanced manufacturing process, greatly improves product performance and service life, the most direct result is that the operation cost of the customer is reduced. The optional VF drive technology yields great energy-saving, reducing the running cost to the maximum.

Colorful decoration: Various styled handrail can meet personal demand in different environments. Beautiful stainless steel floor plate has a three-dimension effect. Inner and outer decking adopts stainless steel.

Compact structure, ease strain: Short pallets can greatly reduce space span, which can flexibly fits the building structure and save the construction space for the customer. It comprises H version (horizontal), I version (incline) and C version (compact) can let the customer have a free choice on his original layout.



Stable and reliable investment: The pallet directly connecting with the chain which makes the running more smoothly and quietly, thus the service life is extended and its maintenance can be easily conducted. Special designed big wheel handrail drive runs in low noise and big power, which improves the running condition of handrail, its life is hence prolonged. Unique tube structure has a big load capacity, which greatly improves the overall stability and service life.

# Heavy Duty Type Escalator

## When we ascend the crest of our objective, the others appear so small.

TENAU SMEH30 public traffic type escalator is a significant achievement in the innovative steps of TENAU Elevator. The glorious 25m lifting height starts a new highlight in the domestic indoor public traffic type escalator field. It extends the product application to a broader range.

## V-shaped handrail

It reinforces tensile breaking strength, prolongs service life of the handrail, strengthens contact area of handrail rotary end, enlarges handrail friction and effectively drives the handrail movements.

## The roller is outside the step chain

The roller is outside the chain.  $\phi 100\text{mm}$  is diameter of master and slave wheel. It reduces the compressed load of main wheel and prolongs the roller's service life. The chain applies reinforced materials and structural design with enlarged tensile strength. The roller can be renewed independently so as to save the repair and maintenance period.

## It increases the driving force and turning space

Regarding the turning radius, it largely increases the driving force and turning space of the whole transmission. In addition, it thickens the drive spindle diameter and enables the better bearing capacity.

## Auxiliary brake

Auxiliary brake is in the upper part of the machine room. It uses frictional principle and the auxiliary brake operates through wedge and brake disc that is installed in spindle drive.

## Emergency stop switch

On the basis of setting emergency stop switch in the original upper / lower entry / exit, emergency stop switch also sets every 5 meters of outer cover plate. It is used for sudden events. It can quickly stop the escalator and ensure the passengers' safety too.



## 4 horizontal steps

It applies 4 horizontal steps to enlarge the buffer distance in the travel, therefore the passengers are safer in using the escalators.

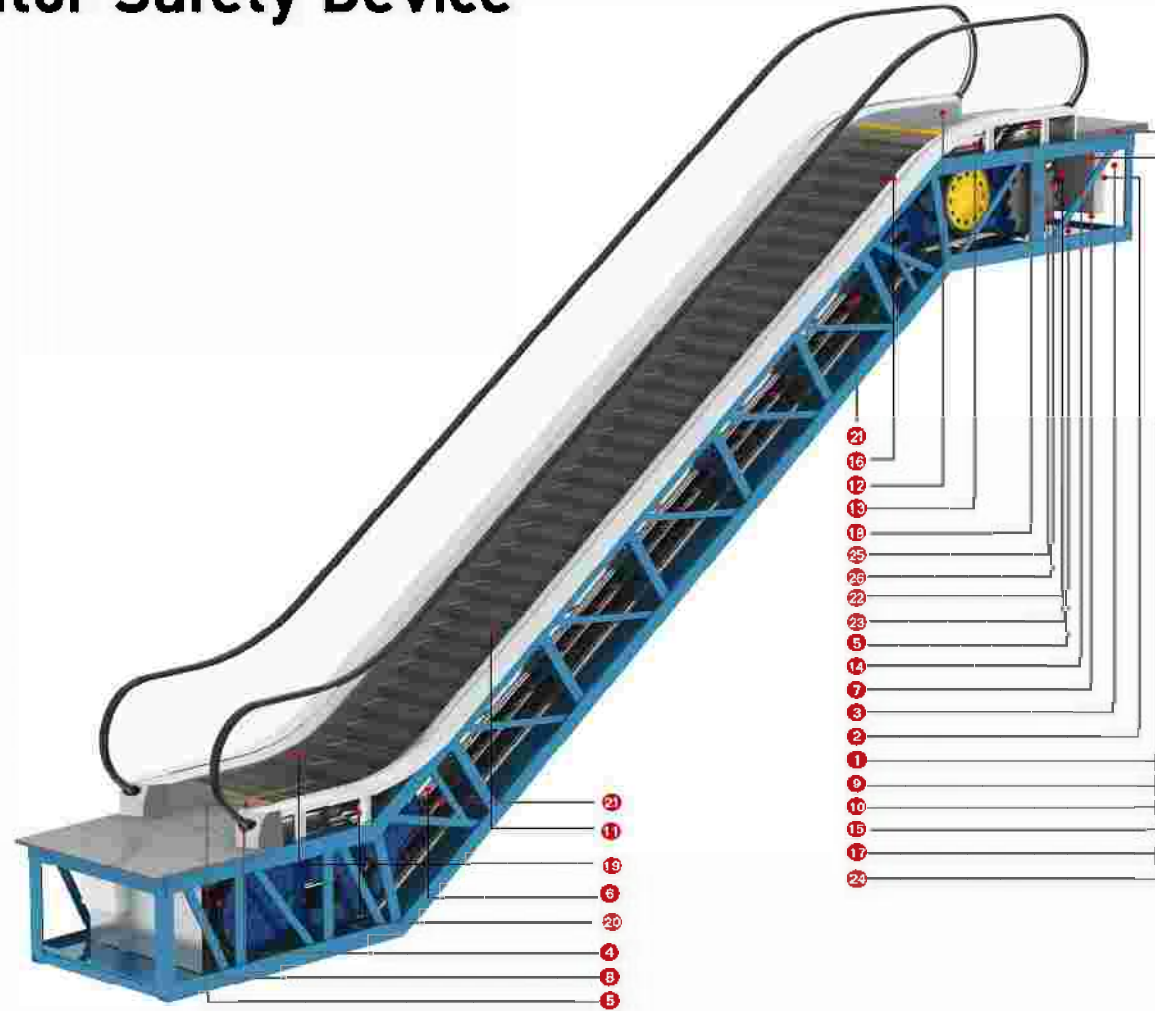


## Technical specification of escalator installed in the escalator test tower

Type	Outside type Heavy duty type (Public transportation type)
Travelling height	25000mm
Horizontal span	51847mm
Inclined angle	30°
Step width	1000mm
Rated speed	0.65m/s

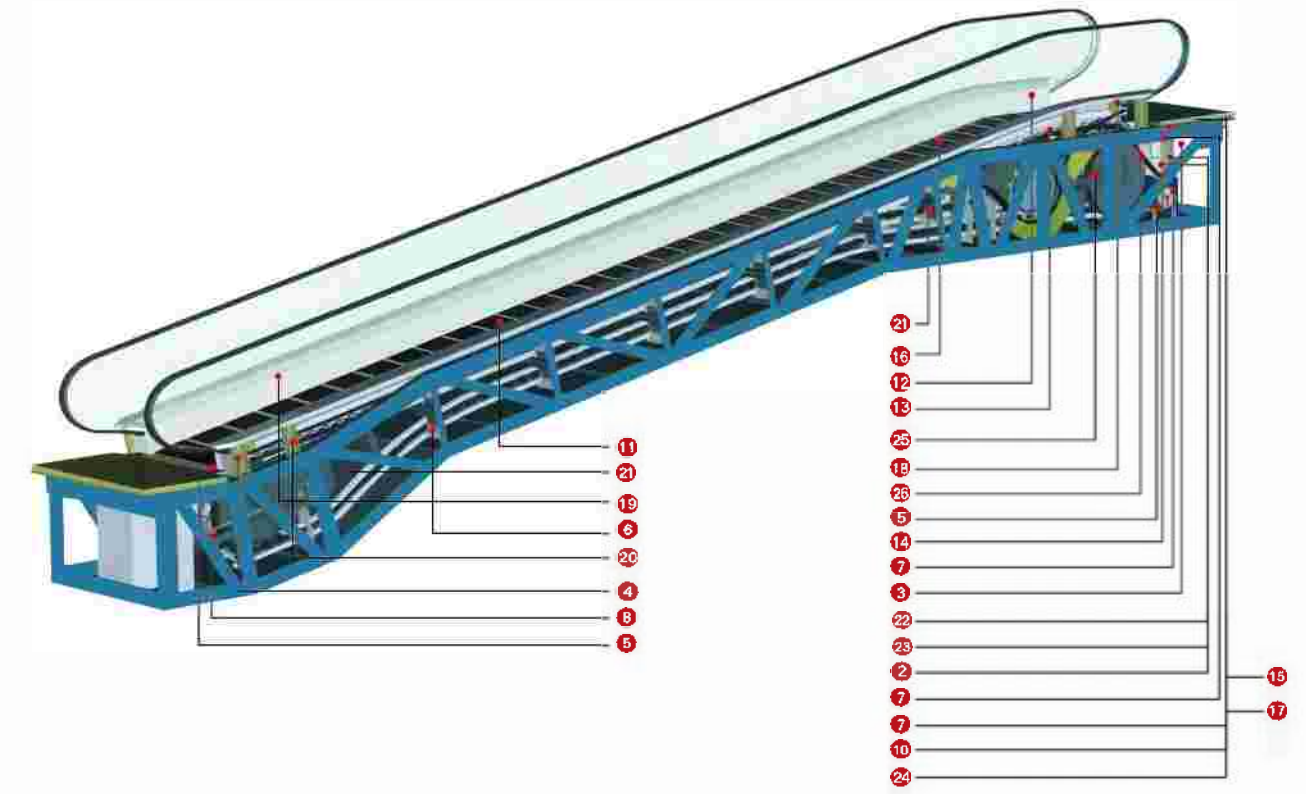
Quantity of flat steps	4
Traction machine power	37KWx2
Inverter power	75KW
Diameter of step main roller	$\phi 100$
Diameter of step secondary roller	$\phi 100$
Handrail drive mode	Spindle-driven

# Escalator Safety Device



Standard function	Description of functions
1.Lack of phase, error phase protection	If lack of phase or error phase has been checked out, the escalator (passenger conveyor) will automatically stop the operation.
2.Motor over-load protection	When the current exceeds 15% of the current rating, the escalator will automatically stop the operation.
3.Electrical appliance loop protection	It offers the automatic circuit disconnecting device to protect the circuit and mains components of the escalator (passenger conveyor).
4.Handrail inlet protection	When some foreign substance has been clipped in the handrail inlet, the escalator (passenger conveyor) will automatically stop the operation.
5.Comb plate safety device	When some foreign substance has been clipped in or between the combs, the escalator (passenger conveyor) will automatically stop the operation.
6.Step sagging protection device	When there is abnormal step bending, the escalator (passenger conveyor) will stop the operation before the step entering into the comb plate.
7.Broken drive-chain safety device	When the drive-chain has been over-stretched or it is broken, the escalator (passenger conveyor) will automatically stop the operation.
8.Broken step chain protection	When the step (plate) chain has been over-stretched or it is broken, the escalator (passenger conveyor) will automatically stop the operation.
9.Over-speed protection	When there is over-speed to the escalator (passenger conveyor), it will automatically stop the operation.
10.Direction reversal protection	When it comes the unintentional reversal of the direction of travel, the escalator (passenger conveyor) will automatically stop the operation.
11.Security line	The yellow synthetic resin security line is located in the front position and two sides of the escalator tread so that the passengers will not tread in-between the edge of the adjacent step and the lift group (lengthened skirt panel). The security line on both sides of the step is higher than the tread surface. (The passenger conveyor offers the selective yellow spray-painted security lines.)
12.Emergency stop button	When the button has been pressed down, the escalator (passenger conveyor) will stop the operation.
13.Skirt panel protection	When some foreign substance has been clipped in between the skirt panel and the step, the escalator (passenger conveyor) will automatically stop the operation.

# Moving Walk Safety Device



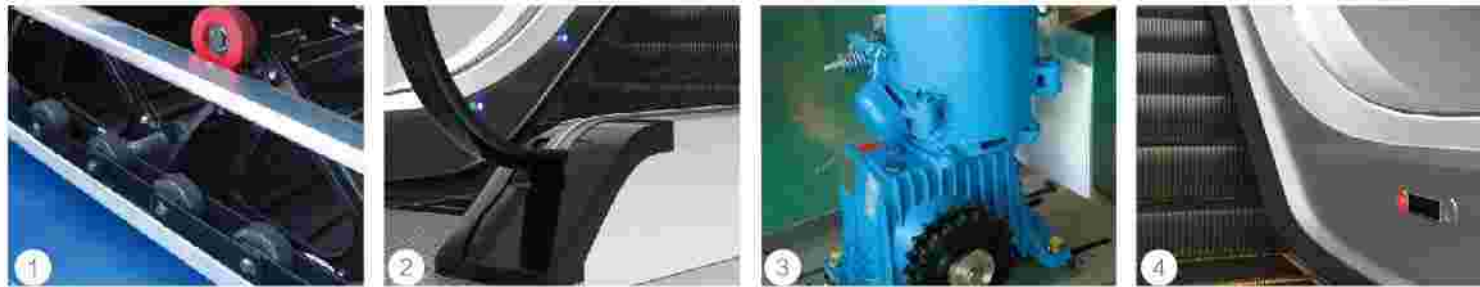
14.Brake protection	When the electric force falls short of supply or it acts any of the safety device, the brake function goes into effect by the safety device through the spring resilience action. In this way, the escalator (passenger conveyor) stops the operation.			
15.Safety inspection switch	It is a safety device to prevent from the escalator starting during the inspection and maintenance.			
16.Step illumination	Illumination exists in the upper and lower ends of the escalator, in the lower part of the step in order to remind the passengers of the security matters.			
17.Alarm bell starting device	The alarm bell rings when it starts the escalator in order to remind the passengers of the security matters.			
18.Control device for handrail breakage	When the handrail is broken, the escalator will automatically stop the operation.			
19.Skirt panel brush	The brush that has been installed between the skirt panel and the step will prevent the passengers from touching the skirt panel. It is not merely restricted to the escalator.			
20.Anti-static electricity device of the handrail belt	21.Anti-static electricity device of the stepsboard	22.The steps (pedal) loss protection	23.Fault display	24.Automatic refueling function

Option functions	Description of functions
25.VVF variable frequency energy-saving system	When chooses the frequency converter, it can effectively reduce the energy consumption.
26.Comb illumination	The illumination has been installed in the skirt panel near the comb plate. It offers the lighting for the step and the comb plate. It is more convenient for the passengers to up and down the escalator.
27.Handrail illumination	The handrail illumination has been installed in the handrail frame. The gentle light adds charm to the running escalator.
28.Automatic start / stop	The infrared ray sensor which is near the floor plate can detect the passenger that enter into the floor plate. Then it will automatically start the operation. After all the passengers leave, it will automatically stop the operation again in order to save the energy loss. Scanning sensor and traditional guide rod are available for your choice.
29.Fail-safe brake	When the chain drive breaks or the steps and handrail operating in the opposite direction of the specified direction, the assistant brake will cease the escalator. When the height of the escalator is over 6 meters, or on the pavement, it is necessary to be equipped with this device.



# Standard & Optional Function

TENAU escalator / moving walk utilize multiple cutting-edge technologies to offer rich and varied functions for users to choose based on their needs. They fully satisfy the needs for new life in the future.



## 1 Step chain-roller inbuilt (standard)

The roller has been internally installed in the specially-designed roller step chain. It can effectively fulfill the reduction of the noise during the driving process and bring about a more smooth and quiet operation.

## 2 Handrail inlet (standard)

Novel, trendy and attractive design for the entrance and exit of the handrail belt makes the escalators more live and amicable.

## 3 Vertical type traction machine (standard)

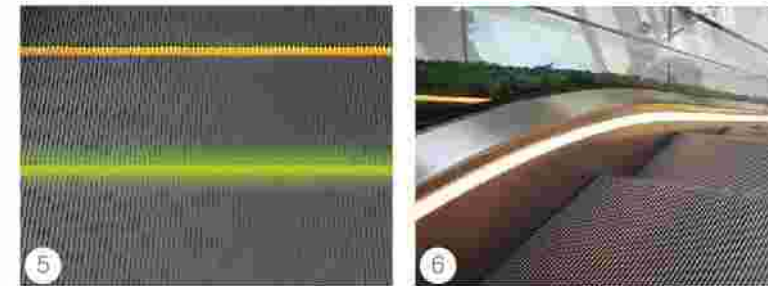
Higher transmission effectiveness, lower noise and longer service hours.

## 4 Moving directions and failure display (standard)

By means of observing the digital readings on the displaying plates mounted on both sides of the skirts board at the entrance and exit of the escalator (or moving walks), the maintenance work can be made promptly and easily.

## 5 Illumination for the passengers (standard)

Green light softly beams out from the space between the engaged teeth of the two neighboring steps to remind the passengers to be aware of the level sections both at the entrance and exit, resulting in increased security for the passengers.



## 6 Emergency brake device (optional)

The skirt board illumination arranged along side the steps' arc moving contour makes the passengers feel more comfortable and safe.

## 7 Heating device (optional)

Each escalator usually installs three heating devices. One is beside the host in the upper machine room. It mainly heats the host. The second is installed in the mid escalator. And the third is in the lower part. It mainly heats the whole escalator.

## 8 Variable frequency driving-VVVF (optional)

When there's no load, the escalator (or moving walk) moves at low speed and when the approach of a passenger is detected, it restores to the normal speed. This shows conspicuous energy saving effects, saving up to 40% of power.

## 9 Electric automatic lubrication (optional)

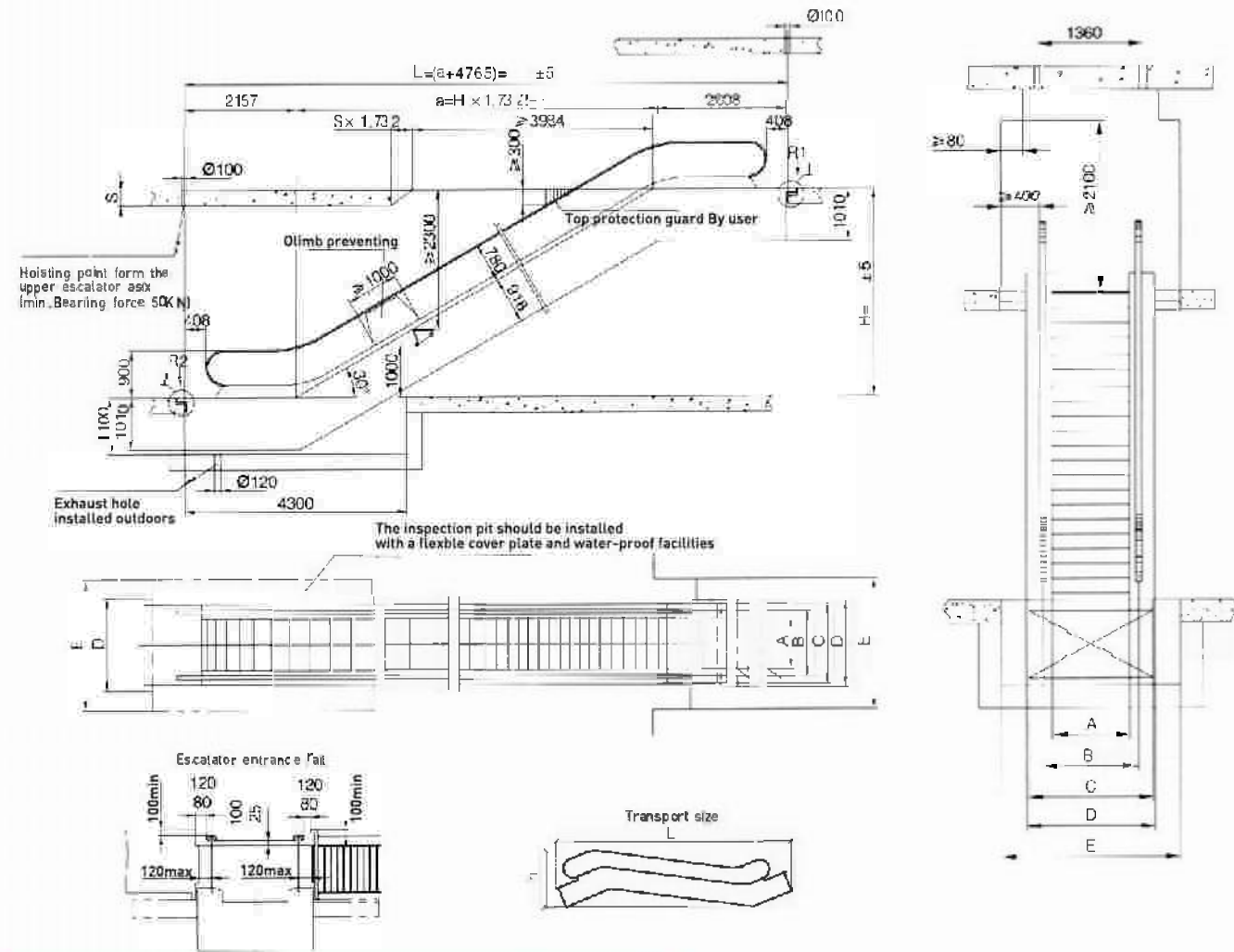
Controlled by PC, the lubricating signals are emitted after a preset period when the hydraulic pump is automatically activated to conduct the lubrication.

## 10 Running direction indication (optional)

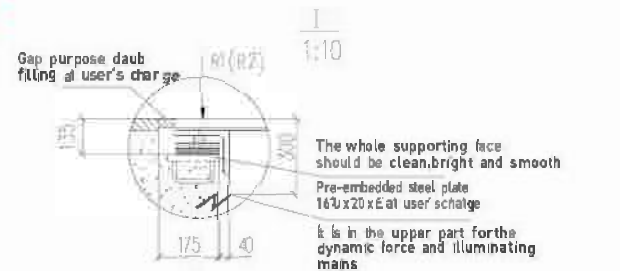
The running direction and forbidden display mark have been placed in the inlet and outlet of the handrail. The obvious running or forbidden instruction ensures the safe riding of the passengers with great ease.



# 30° Escalator Construction Parameter

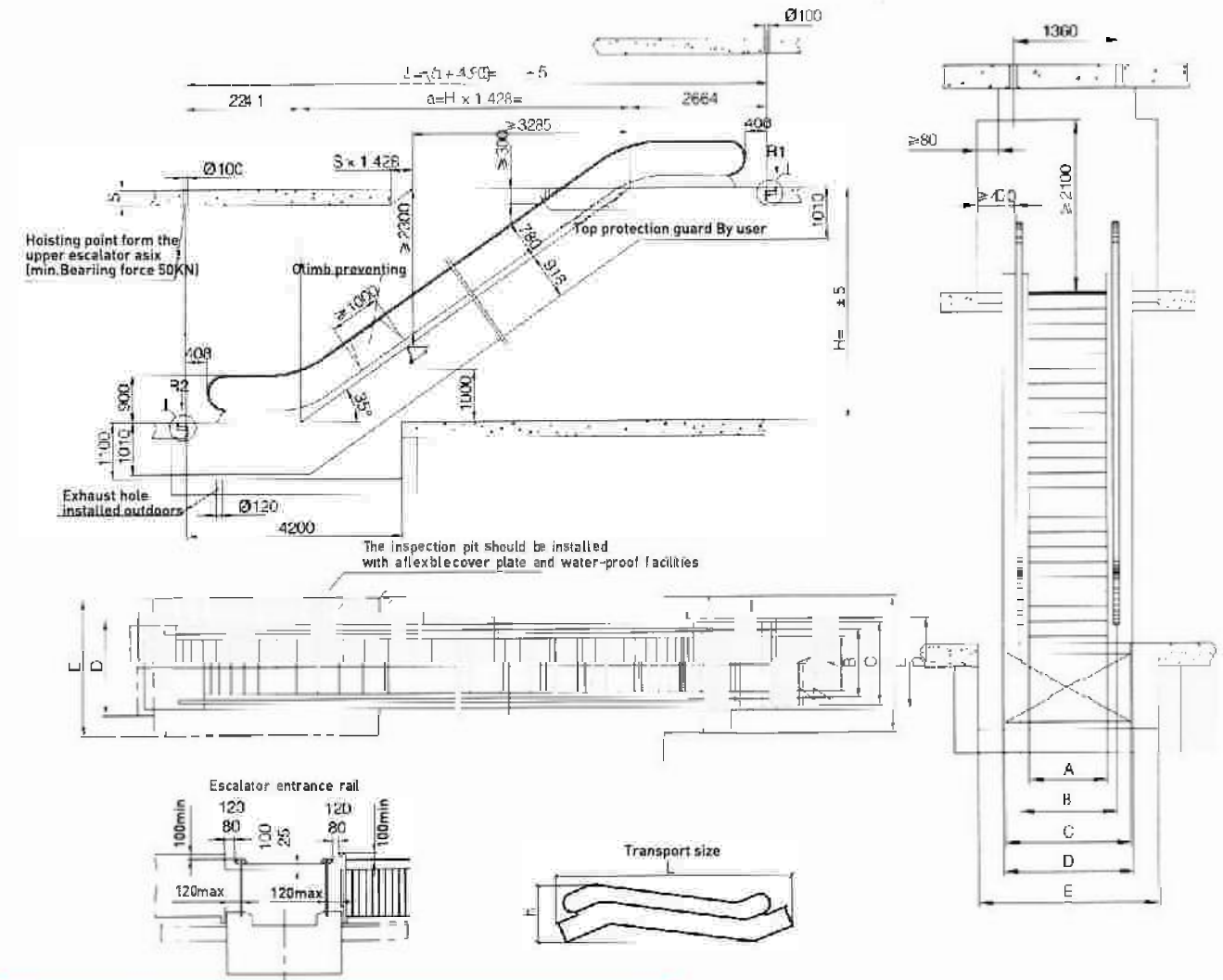


Model	Travelling height(mm)	Net weight KN	Supporting		Motor power	Transport size	
			R1 KN	R2 KN		H	L
SEM(600)-30 (4500 Per./h) speed 0.5m/s	3000	57	46	41	8	2750	10900
	3500	60	49	44		2780	11890
	4000	64	52	47		2810	12880
	4500	68	56	50		2830	13870
	5000	71	59	53		2840	14860
	5500	75	62	56		2880	15860
SEM(800)-30 (6750 Per./h) speed 0.5m/s	3000	59	52	47	8	2750	10900
	3500	63	56	50		2780	11890
	4000	67	60	54		2810	12880
	4500	71	64	57	11	2830	13870
	5000	74	68	60		2840	14860
	5500	82	74	66		2860	15860
SEM(1000)-30 (9000 Per./h) speed 0.5m/s	3000	63	59	53	8	2750	10900
	3500	67	64	57		2780	11890
	4000	71	68	61		2810	12880
	4500	75	73	65	11	2830	13870
	5000	83	79	71		2840	14860
	5500	87	84	75		2860	15860
6000	92	88	79	2870	16860		

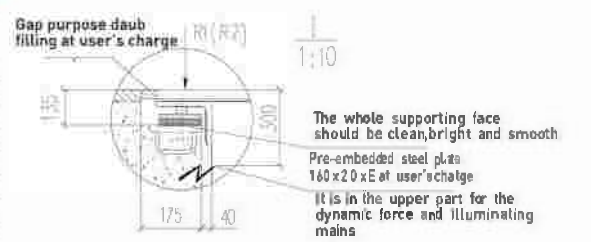


Step width	A	B	C	D	E	F
1000	1000	1158	1238	1600	1660	2310
800	800	958	1038	1400	1460	2110
600	600	756	838	1200	1260	1910

# 35° Escalator Construction Parameter



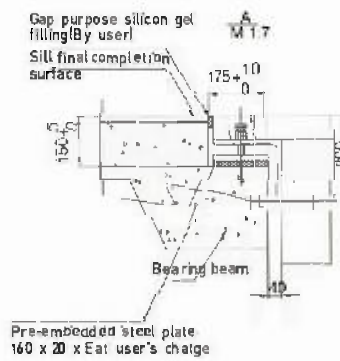
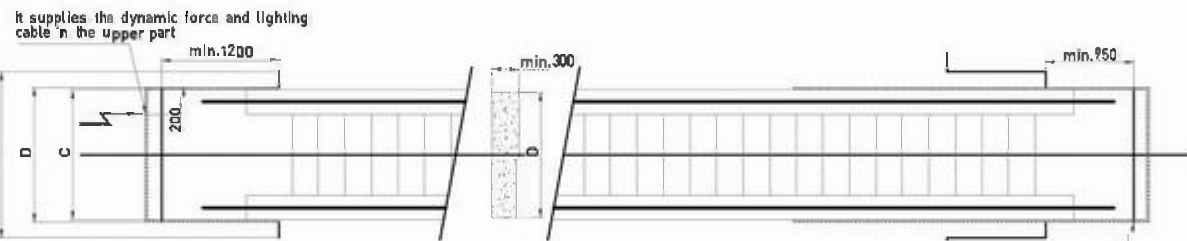
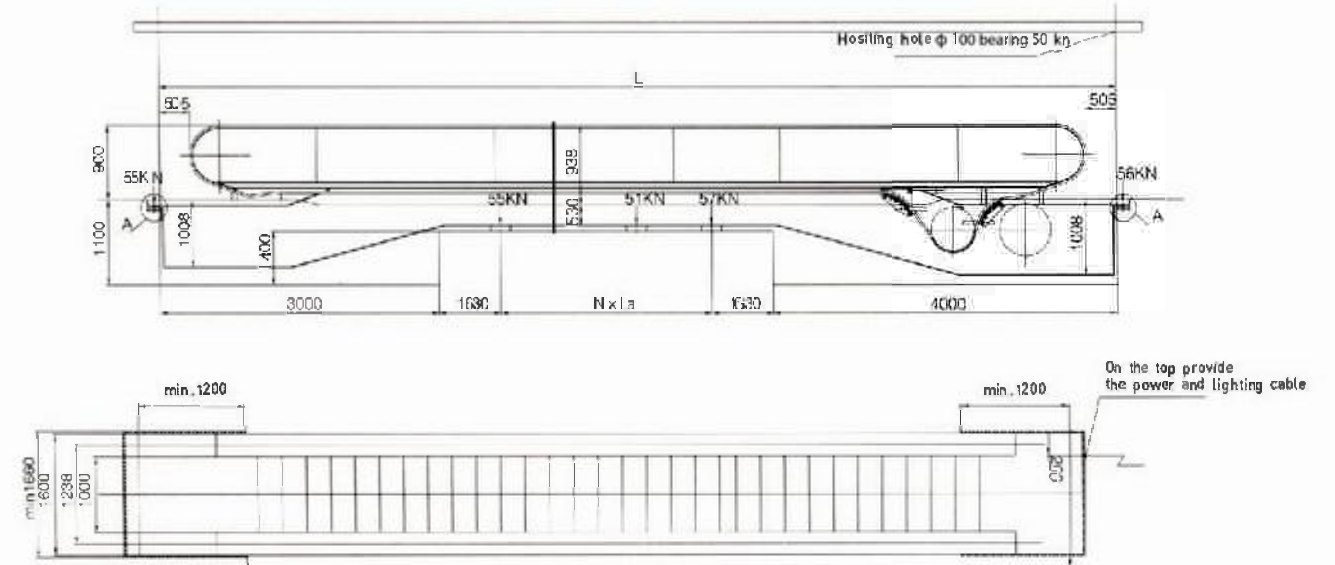
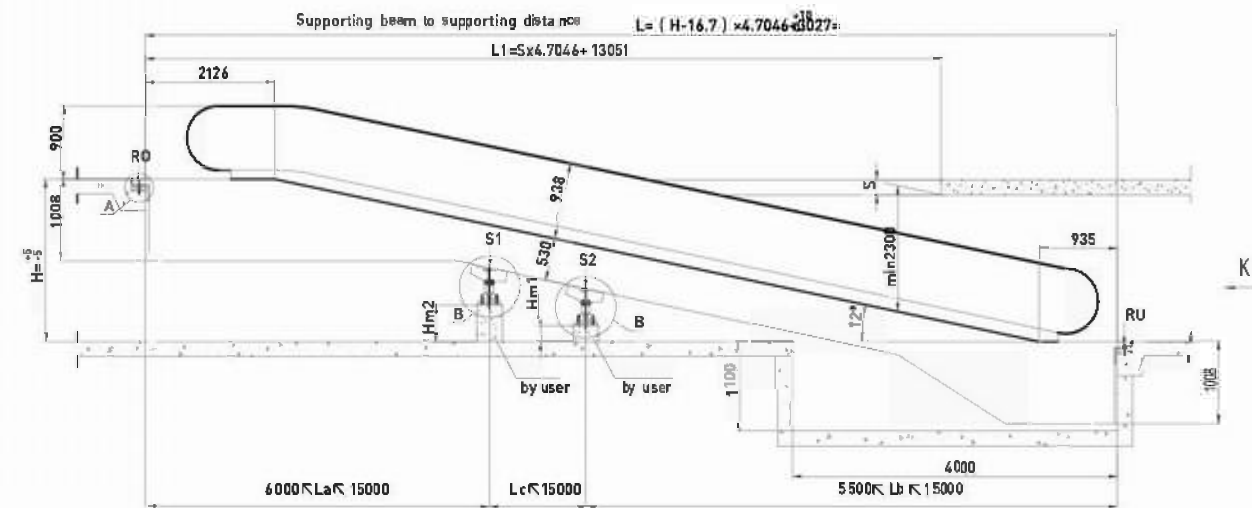
Model	Travelling height(mm)	Net weight KN	Supporting		Motor power	Transport size	
			R1 KN	R2 KN		H	L
SEM(600)-35 (4500 Per./h) speed 0.5m/s	3000	54	43	39	B	2850	10180
	3500	57	46	41		2890	11030
	4000	60	59	44		2920	11890
	4500	64	52	46		2940	12750
	5000	67	54	49		2970	13610
	5500	70	57	51		2980	14470
SEM(800)-35 (6750 Per./h) speed 0.5m/s	3000	56	49	44	B	2850	10180
	3500	60	52	47		2890	11030
	4000	63	56	50		2920	11890
	4500	66	59	53	11	2940	12750
	5000	70	62	56		2970	13610
	5500	73	65	59		2980	14470
SEM(1000)-35 (9000 Per./h) speed 0.5m/s	3000	60	56	50	B	2850	10180
	3500	64	60	53		2890	11030
	4000	67	64	57		2920	11890
	4500	71	67	60	11	2940	12750
	5000	74	71	64		2970	13610
	5500	82	77	69		2980	14470
6000	85	81	72	3000	15330		



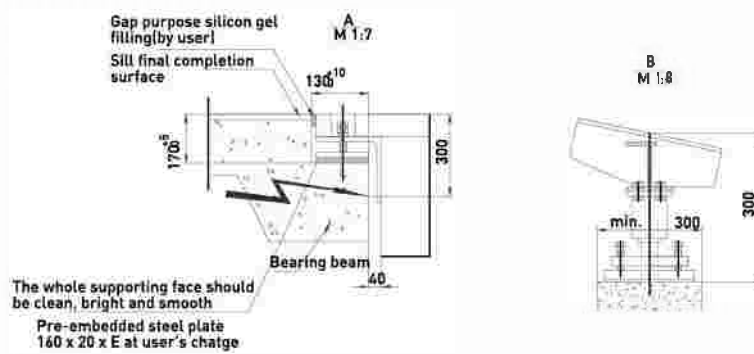
Step width	A	B	C	D	E	F
1000	1000	1158	1238	1600	1660	2310
800	800	958	1038	1400	1460	2110
600	600	756	838	1200	1260	1910

# 12° Moving Walk Construction Parameter

# 0° Moving Walk Construction Parameter



It should fill or cover the gap between the machine and the construction. The user should take care of the standard which is applicable for the well width.



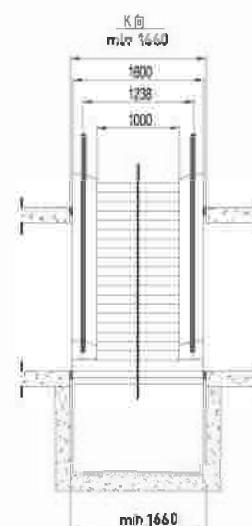
The whole supporting face should be clean, bright and smooth

Pre-embedded steel plate 160 x 20 x E at user's charge

The construction supporting force includes the vibration load

No intermediate supporting		One intermediate supporting		Two intermediate supporting	
$R_0 = 0.0045XL + 13$		$R_0 = 0.0045XL_1 + 13$		$R_0 = 0.0045XL_1 + 13$	
$R_u = 0.0045XL_b + 7$		$R_u = 0.0045XL_b + 7$		$R_u = 0.0045XL_b + 7$	
$S_1 = 0.005R_0(L_a + L_b)$		$S_1 = 0.005R_0(L_a + L_b)$		$S_1 = 0.005R_0(L_a + L_c)$	
$S_2 = 0.005R_0(L_b + L_c)$				$S_2 = 0.005R_0(L_b + L_c)$	

Travelling height	Intermediate supporting	$L_a$ (mm)	$L_b$ (mm)	$L_c$ (mm)	Intermediate supporting height
1601	2663	-	-	-	Hm1
2664	4151	1	-	L-7000	0.2126xLb-1051
4152	5851	1	-	L-15000	-
5852	6000	1	1	L-22000	0.2126x(Lb+Lc)-1066



Model	Travelling height (mm)	Rated speed	Rated load capacity	Inclination	Motor power	A (mm)	B (mm)	C (mm)	D (mm)
SMEH (800/0°)	80000	0.5	6750	0	5.5	800	1038	1400	≥1460
	80000 < L ≤ 130000				8				
	130000 < L ≤ 150000				11				
SMEH (1000/0°)	70000	0.5	9000	0	5.5	1000	1238	1600	≥1660
	70000 < L ≤ 110000				8				
	110000 < L ≤ 150000				11				