

PUBLIC ESCALATOR



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2015 Version



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OTIS

160 OTIS



160 YEARS OTIS

160 years of rich history, leading brand in the elevator industry
 Inventor of the world's first safety elevator
 Inventor of the world's first escalator
 Sales and Service operation located in over 200 countries and a service network covering over 1,700 locations worldwide
 Annual escalator and elevator sales of more than 70,000 elevators in 12 of the world's 20 highest buildings

OTIS in CHINA

With 15,000 employees, Otis China offers professional consultancy and installation services and world-class maintenance support, operating 6 manufacturing sites in Tianjin, Hangzhou, Guangzhou, and etc. Otis engineer team located at three sites dedicate to new product development and product quality improvement.

OTIS CHINA FACTORY



Hangzhou Factory

Building Area: 45,754m²

Capacity:



30,000 units/year



6,000 units/year

CNAS (China National Accreditation Service) Lab



Tianjin Factory

Building Area: 66,673m²

Capacity:



25,000 units/year

USGBC LEED Gold Certification



Guangzhou Factory

Building Area: 48,900m²

Capacity:



4,000 units/year

OTIS Escalator Quality Test Center



OTIS CHINA INTERNATIONAL BUSINESS

125

Covering more than 125 Countries

80,000

Having provided over 80,000 units of elevator & escalator worldwide

15

Meeting 15 International Codes including EN, JIS, ANSI, AS1735, COP2010, SS550, KC, GB and so on



EN81-2000 (Europe)
EN115-2000 (Europe)



JIS (Japan)



ANSI (America)



KC(Korea)



AS1735(Australia)



SAA(Australia)



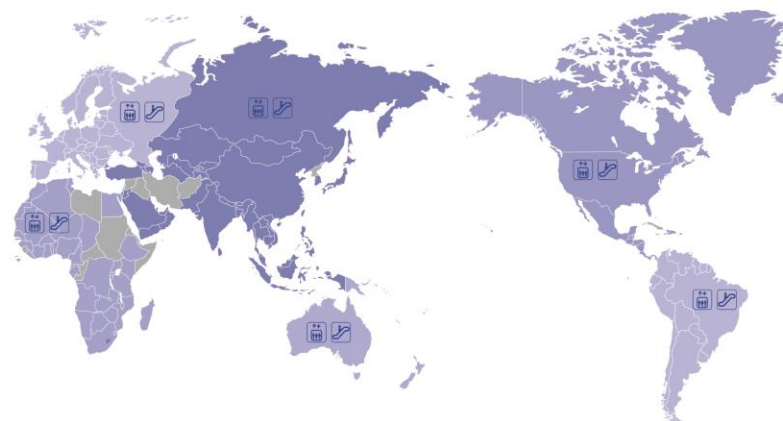
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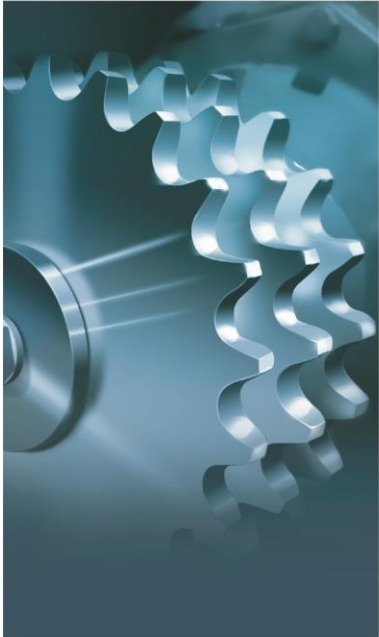
GB16899 2011(China)



SS550(Singapore)



Strongly Powered



Main Machine

We provide various kinds of machine with excellent performance for practical usage and different occasions. Especially, our machine could provide perfect solutions for public large traffic.

- High efficiency gear box
- Compact design structure and small size
- Low noise and smooth operation
- Available for indoor and outdoor use



EM-W1



Beijing Capital Airport

Quality & Reliability



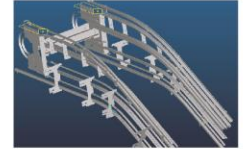
Control System

As new generation escalator control system platform, GECS controller with 32 bit microprocessor can be configured for different functional requirement.



Automatic Lubrication System

Automatic lubrication system ensures low noise and vibration during the operation of chains and rollers.



Track System

The upper and lower track system is spliced by formed guider which could adjust the error in the part of system, ensure better performance and lower vibration and noise.



Beijing Metro Line 10



Outside Roller Step Chain

The safety factor of main drive chain and step chain is greater than 5. When rise is greater than 13 meters, outside roller step chain will be used to ensure the strength.



Stainless Steel Step

Public escalator adopts the stainless steel steps which have nice appearance, easy to maintain, firm, antioxidation and anti-slip. 20 million cycle load tests of OTPE ensure excellent performance.

	CONFIGURATIONS	XO21NP-S	XO21NP-L	XO-PE
Max Rise	speed- 0.5m/s	13	15	20
	speed- 0.65m/s	10	15	20
Speed	0.5m/s	S	S	S
	0.65m/s	O	O	O
	0.75m/s	N/A	O*	O*
			option only for 50HZ	
Machine	EM-W1	S	S	N/A
	EM-H2	O	O	O
	EC2			
	EC2-25			
Controller	GECS	S	S	S
Inclination	30°	S	S	S
	27.3°	O	O	N/A
	23.2°	O	O	N/A
Balustrade	Glass	S	S	N/A
	Sloped opaque	O	O	S
Handrail drive	Friction wheel drive	S	S	N/A
	Newel drive	N/A	O	S
Tension Carriage	Welding side plate	S	S	N/A
	Sprocket	N/A	N/A	S
Step	Stainless steel	S	S	S
	Aluminum	O	O	O
Step chain	Roller inside	S	S	N/A
	Roller outside	N/A	N/A	S
Deflect of Truss		< 1/1000	< 1/1000	< 1/1500
S: Standard		O: Optional	O*: Non-Standard	N/A: Not Available

Safety

The safety devices, electrical safety devices, structures and all their components are strictly in accordance with EN115. In European Union, we can provide public escalators with EN115-2008 which presents the highest performance on safety for escalators. Also, we could supply public escalators with EN115-2008 for other districts as option.

- 1 Auxiliary Brake
- 2 Step Broken Control Contact
- 3 Floor Plate Check Switch
- 4 Step Chain Control Contact
- 5 Main Drive Chain Control Contact
- 6 Integrate Operational Brake
- 7 Comb Plate Contacts
- 8 Motor Thermal Device
- 9 Electronic Non Reversal Device
- 10 Missing Step Device
- 11 Emergency Stop Switch
- 12 Handrail Entry Device
- 13 Electronic Overspeed Governor

1 Auxiliary Brake

The auxiliary brake will act when the escalator overspeed, and even when the direction of movement of the steps is involuntarily reversed.

2 Step Broken Control Contact

The Step Broken Protection Devices are located at both landings. The contact is activated if either a step or chain wheel breaks or if a step is lowered due to rupture.

3 Floor Plate Check Switch

A safety switch installed under the floorplate to ensure floorplate is properly closed; The safety switch will initiate to stop escalator's operation until the floorplate is properly closed.

4 Step Chain Control Contact

The safety switch is located on the tensioning carriage of the lower landing. If the step chain breaks or stretches abnormally, the safety switch will initiate to stop the escalator's operation.

5 Main Drive Chain Control Contact

(only for EN115-1995)

Located in the upper landing. In case of excessive sagging or breaking of main drive chain the auxiliary will be activated by a mechanical safety switch.

Standard

- Phase sequence protection
- Step anti-static device
- Handrail anti-static roller
- Motor fan cover contact

Optional

- Control contact for lifted brake*
- Control contact for brake liner wear monitor
- Handrail speed monitor *
- Handrail broken monitor
- Skirt panel safety switch
- Mechanical over speed governor
- Skirt panel brush *

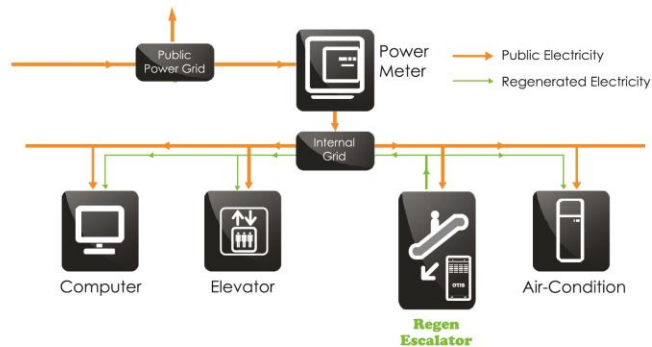
Note: (only for EN115-1995)
Note: *Standard for EN115-2008



Energy saving

Regen Technology

Public escalator introduces OTIS energy regenerative technology as option. OTIS Regen technology could convert the reduced system potential energy to electricity energy. Regen technology can also filter the regenerated electricity energy and make it clean enough to be re-used.



Benefits

- ▶ Increase the geared Permanent Magnet machine efficiency by 6%
- ▶ Save energy about 40% in average
- ▶ OTIS regenerative drives save and regenerate energy by following 3 approaches:
 - ▲ Energy saving by means of idle speed running escalator when no passenger on the escalator
 - ▲ Energy saving by high efficiency of permanent magnetic machine over all passenger load in VF mode
 - ▲ Energy regenerating by the down running mode when generating power



The ETA-Plus Running Mode is normal mode of the operation used under normal circumstances, which is suitable for most of the application.

ETA-Plus Running Mode



The VF Running Mode is generally applicable for low traffic flow locations such as hotels and office buildings.

In "Continuous" Mode, the escalator will slow down while no passenger on it.

In "Auto-start" Mode, once the escalator detects that there is no passenger on the escalator, it will slow down. And moments later, the escalators will stop.

VF mode cuts down on noise levels and can save considerable energy depending on passenger flow.

VF Running Mode(Continuous)



VF Running Mode (Auto-start)



Intermittent Running Mode



Energy-saving

Balustrade Type



G Type



Sloped Opaque



S Type

Handrail Type



C Type



V Type

Outdoor

All-weather Surface Treatment

Hot-dipped galvanizing and outdoor surface anticorrosion spray techniques, such as Dacromet, are used to meet a long-term anticorrosion requirements.

Machine Room Heating

Heating device adopts radiator, prevent the lubrication and machine from freezing.

Handrail Heating

Handrail heating adopts cable-type heater, could be used to melt the ice on the handrail.

Comb Heating

Comb heating adopts underlay-type heater, installed under the upper and lower landing, ensure the normal operation of escalators.

Chain Cover

Chain cover will protect the chain drive and keep the rain water away from the chain drive.

Water Levels Switch

Monitor the water level of pit, and activate when the water exceed the preset limitation.

Water-oil Separator

The device, installed in the lower landing, prevent scrap lubricating oil from discharging directly and protect the environment.

Package	Location	Ambient Temperature	Limitation	Humidity
A1	With Canopy and side cladding	2°C-40°C	No	<80%
A2	With Canopy but no side cladding	2°C-40°C	No	<80%
B	Directly expose to weather	2°C-40°C	No	<80%
C	Directly expose to weather	-10°C-40°C	No	<80%
D	Directly expose to weather	-25°C-40°C	Only st.st. sloped opaque balustrade applicable	<80%

Notes:

Package A1: The escalator does not expose itself to the external environment directly with canopy and enclosure, and the rain water could not get to the escalator directly.

Package A2: The escalator does not expose itself to the external environment directly with canopy, but the rain water would get to the escalator directly from both sides.

Package B: The escalator expose itself to the external environment directly. Ambient temperature is in the range of +2°C to +40°C.

Package C: The escalator expose itself to the external environment directly. Ambient temperature is in the range of -10°C to +40°C.

Package D: The escalator expose itself to the external environment directly. Ambient temperature is in the range of -25°C to +40°C.



Providing Perfect Solutions For The City Transport Hub

		5	
	2	3	8
1	4	7	

1. Saudi Arabia Mecca Metro
2. Singapore Thomson-East Coast MRT Line
3. UAE Abu Dhabi International Airport
4. Beijing Capital Airport
5. Greece Thessaloniki Metro
6. Beijing MACALLINE
7. Shanghai MACALLINE
8. Tianjin Hotel



STEP WIDTH	Stainless Steel Balustrade	
	1000mm	800mm
DIM5	1570	1367
DIM6	1208	1005
DIM7	1017	814
DIM8	1530	1330
DIM9	1630	1430
TN1	90	90
TN2	90	90

XOEC Exterior cladding dimensions refer to TN1,TN2.

STEP WIDTH	Stainless Steel Balustrade		Glass Balustrade	
	1000mm	800mm	1000mm	800mm
DIM5	1570	1367	1570	1367
DIM6	1208	1005	1247	1044
DIM7	1017	814	1017	814
DIM8	1530	1330	1530	1330
DIM9	1630	1430	1630	1430
TN1	90	90	90	90
TN2	90	90	90	90

Min 2500

Min 2000

Min 2100

400mm

Clear floor access area

Install vertical detector when the distance less than 400mm(BY USER)

If exterior cladding is done by user and distance between exterior bottom and truss bottom

If exterior cladding is done by user and distance between exterior bottom and truss bottom
TN1, TN2 > 90mm, please contact CLC

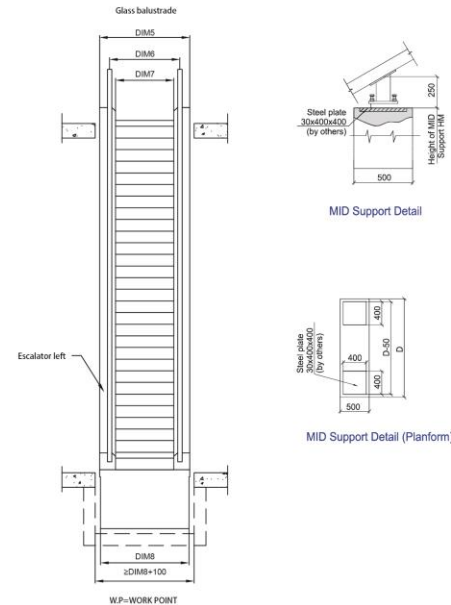
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Stainless Steel Balustrade

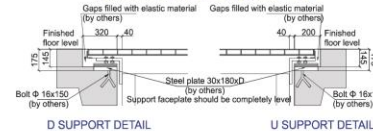
ESCALATOR TYPE	ESCS TYPE			ESCL TYPE		
	2	3	4	2	3	4
FL STEP						
LL	2120+TRUSEXL	2520+TRUSEXL	2920+TRUSEXL	2279+TRUSEXL	2679+TRUSEXL	3079+TRUSEXL
LU	2705+TRUSEXL	3105+TRUSEXL	3505+TRUSEXL	2910+TRUSEXL	3310+TRUSEXL	3710+TRUSEXL
DM1	1901	2301	2701	2105	2505	2905
DM2	1517	1917	2317	1676	2076	2476
DM3	2030+TRUSEXL	5030+TRUSEXL	5830+TRUSEXL	5300+TRUSEXL	5700+TRUSEXL	6100+TRUSEXL

Note:

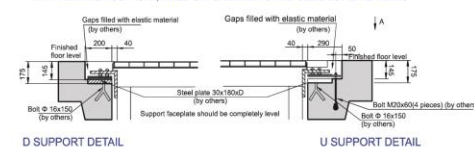
Note:
1. TRUSEXU is the extension length for upper landing, TRUSEXL is the extension length for lower landing.
2. When the escalator is equipped with EM-H2 machine or VF inverter, it should extend the truss LU by 500mm at least.



ARRANGEMENT WITH PIEZO CONTACT MAT



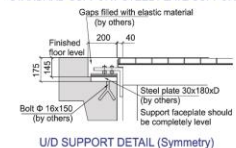
ANTI VIBRATION SUPPORT, FIXED UPPER LANDING AND SLIDE LOWER LANDING



D SUPPORT DETAIL

U SUPPORT DETAIL

STANDARD SUPPORT STEEL PLATE SUPPORT



U/D SUPPORT DETAIL (Symmetry)

- 1/ This technical layout only use for X021NP23.2" and when its rise in 3-15 meters.
- 2/ All gaps between escalator and building must be closed with elastic material (by user)
- 3/ For special conditions such as extended free span bottom or left side or right side outside cladding weight exceeding 20 kg/m², wind loads or earthquake loads please contact ddc;
- 4/ TRUSEX is the extension length for upper landing, TRUSEX.L is the extension length for lower landing
- 5/ The unit for DBE in support force calculation is meter.
- 6/ When the escalator is equipped with EM-HZ motor or transducer, it should extend the truss LU by 500mm at least.
- 7/ When two escalators are arranged as scissors and the customer calls for ends in one level, the lower landing's extension should be TRUSEX.L+202mm.
- 8/ One intermediate support 0.4XDBE,LS1LU,0.4XDBE;
Two intermediate supports 0.27XDBE,LS1LU,0.4XDBE;
LS1LU=H1-L1,LS1LU=H2-L1+1341
H2H1=LS1+LS2-L1,LS1LU=23-L1+1341
H2H1=LS1+LS2-L1,LS1LU=23-L1+1313.
- 9/ Power supply cable requirement:
Power and heating supply: 320V 50Hz
Lighting supply: 220V 50Hz

Main Power Supply Cable Type	Machine Power	Voltage	
		<380V	≥380V
	P≤11.7KW	10mm²	10mm²
	11.7<P≤190KW	16mm²	10mm²
	15<P≤20KW	25mm²	10mm²
Supply Cable Length	20<P≤30KW		16mm²
	30<P≤37KW		25mm²
		L≤3m=DL1 L≤1.5m=DL2	
Heater Power Supply Cable Type	Radiant heater	10mm WATERPROOF 10mm² WATERPROOF SOFT WIRE CABLE	

10/ interface between escalator and building(by user): access restriction Device, anti-slide device, vertical deflector device acc.to GB16899-2011-5.5.2.2

11/ While CLAD=PIT arrangement, TN2=0. Definition of exterior cladding arrangement refer to xaa28321bc

12/ If exterior cladding is done by others, distance between exterior bottom and truss bottom TN1 and TN2 would be defined according to customer's requirement.

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ESCALATOR TYPE		EXC TYPE			EXCL TYPE		
FL STEP		2	3	4	2	3	4
LL		2197*TRUSEUX	2597*TRUSEUX	2997*TRUSEUX	2389*TRUSEUX	2789*TRUSEUX	3189*TRUSEUX
LU		2728*TRUSEUX	3128*TRUSEUX	3528*TRUSEUX	2974*TRUSEUX	3374*TRUSEUX	3774*TRUSEUX
DIM1	Glass Balustrade	1000	1960	2360	2760	2206	2606
		930	1925	2325	2725	2171	2571
	Glass Balustrade	1000	1940	2340	2740	2186	2586
		930	1905	2305	2705	2151	2551
DIM2	Glass Balustrade	1000	1630	2030	2430	1822	2222
		930	1595	1995	2395	1787	2187
	Glass Balustrade	1000	1610	2010	2410	1802	2202
		930	1575	1975	2375	1767	2167
DIM3		4690*TRUSEUX	5090*TRUSEUX	5490*TRUSEUX	4890*TRUSEUX	5290*TRUSEUX	5690*TRUSEUX

- 1/ This technical layout only use for K021NP273+ and when its rise in 3-15 metres.
- 2/ All gaps between escalator and building must be closed with elastic material (by user)
- 3/ For special conditions such as extended free span, between or left side or right side exterior cladding weight exceeding 20 kg/m², wind loads or earthquake loads please contact etc.
- 4/ TRUSEXU is the extension length for upper landing, TRUSEXL is the extension length for lower landing
- 5/ The unit for DBE in support force calculation is meter.
- 6/ When the escalator is equipped with EM-H2 machine or transducer, it should extend the true LU by 500mm at least.
- 7/ When two escalators are arranged as scissors and the customer calls for ends in one level, the lower landing's extension should be TRUSEXL+202mm.
- 8/ One intermediate support 0.4XDBE<SL<1.0XDBE;
Two intermediate supports 0.7XDBE<TRUSEXL<1.5SL<1.5XDBE;
HM1=(SL+1/2 LU)xtan(27.3°)-1349
HM2=(SL+1/2 LU)xtan(27.3°)-1349.
- 9/ Power supply cable requirement:
1> Indoor A1, A2, B package need client provide one cable and connect directly to main power box;
2> C and D package need client provide two cables and connect directly main power box and heating power box;

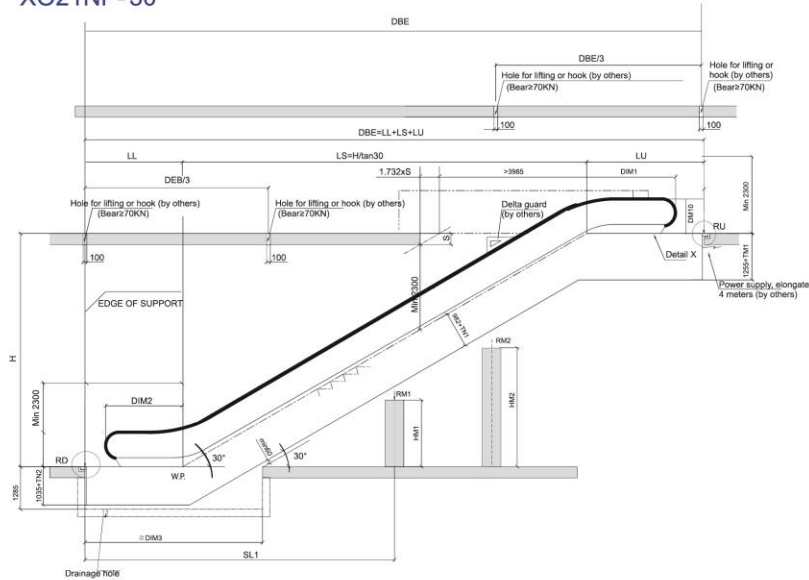
Main Power Supply Cable Type	Machine Power	Voltage	
		< 380V	≥380V
	Ps11.7KW	10mm²	10mm²
	11.7 < Ps19KW	16mm²	10mm²
	15 ~ Ps20KW	25mm²	10mm²
	20 ~ Ps30KW		16mm²
Supply Cable Length	30 ~ Ps37KW		25mm²
		L≥3m+DL1 L≥1.5m+DL2	
Heater Power Supply Cable Type	Radiant heater	10mm² WATER PROOF SOFT WIRE CABLE	

10/ interface between escalator and building(by user):access restriction Device, anti-slide device, vertical deflector device acc. To GB16899-2011-5.5.2.2

11/ While CLAD=PIT arrangement,TN2=0.Definition of exterior cladding arrangement refer to xaa28321bc

12/ If exterior cladding is done by others, distance between exterior bottom and truss bottom TN1 and TN2 would be defined according to customer's requirement.

XO21NP-30°



Slipped opaque balustrade Configurations

ESCALATOR TYPE	ESCS			ESCL		
FL. STEP	2	3	4	2	3	4
LL	2248+TRUSEXU	2648+TRUSEXU	3048+TRUSEXL	2481+TRUSEXL	2881+TRUSEXL	3281+TRUSEXL
LU	2762+TRUSEXU	3162+TRUSEXU	3562+TRUSEXU	3056+TRUSEXU	3456+TRUSEXU	3856+TRUSEXU
DIM1	1957	2357	2757	2251	2651	3051
DIM2	1644	2044	2444	1877	2277	2677
DIM3	4550+TRUSEXL	4950+TRUSEXL	5350+TRUSEXL	4880+TRUSEXL	5280+TRUSEXL	5680+TRUSEXL

Glass balustrade Configurations

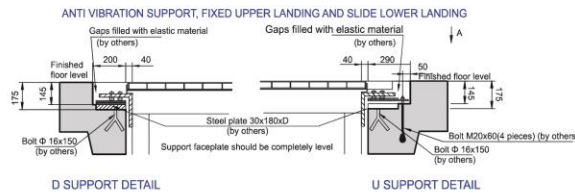
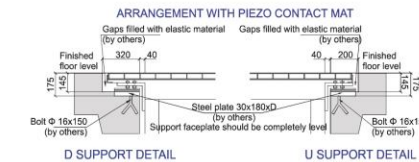
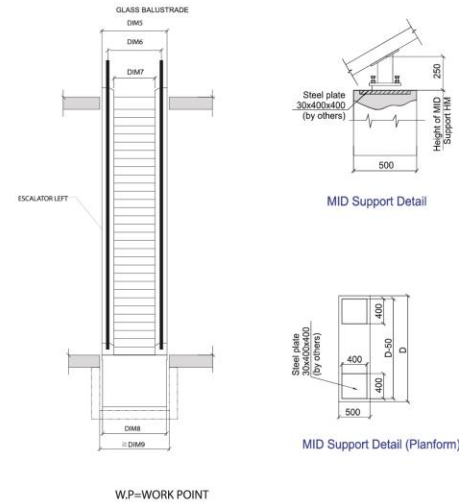
ESCALATOR TYPE	ESCS			ESCL		
FL. STEP	2	3	4	2	3	4
LL	2248+TRUSEXU	2648+TRUSEXU	3048+TRUSEXL	2481+TRUSEXL	2881+TRUSEXL	3281+TRUSEXL
LU	2762+TRUSEXU	3162+TRUSEXU	3562+TRUSEXU	3056+TRUSEXU	3456+TRUSEXU	3856+TRUSEXU
G Type	1000	1994	2394	2289	2689	3089
G Type	930	1959	2359	2254	2654	3054
G Type	1000	1974	2374	2288	2688	3088
G Type	930	1939	2339	2237	2637	3037
G Type	1000	1682	2082	2482	2882	3282
G Type	930	1647	2047	2447	2847	3247
G Type	1000	1662	2062	2462	2862	3262
G Type	930	1627	2027	2427	2827	3227
DIM3	4550+TRUSEXL	4950+TRUSEXL	5350+TRUSEXL	4880+TRUSEXL	5280+TRUSEXL	5680+TRUSEXL

Note:
1. TRUSEXU is the extension length for upper landing, TRUSEXL is the extension length for lower landing.
2. When the escalator is equipped with EM-H2 machine or VF inverter, it should extend the truss LU by 500mm at least.

NOTE: DO NOT SCALE THIS DRAWING, UNLESS OTHERWISE STATED.

STEP WIDTH	1000mm	800mm
DIM5	1570	1367
DIM6	1247	1044
DIM7	1000	800
DIM8	1530	1330
DIM9	1630	1430
TN1	90	90
TN2	90	90

STEP WIDTH	1000mm	800mm
DIM5	1570	1367
DIM6	1208	1005
DIM7	1000	800
DIM8	1530	1330
DIM9	1630	1430
TN1	90	90
TN2	90	90

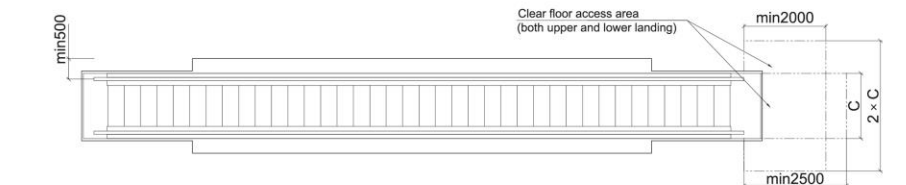


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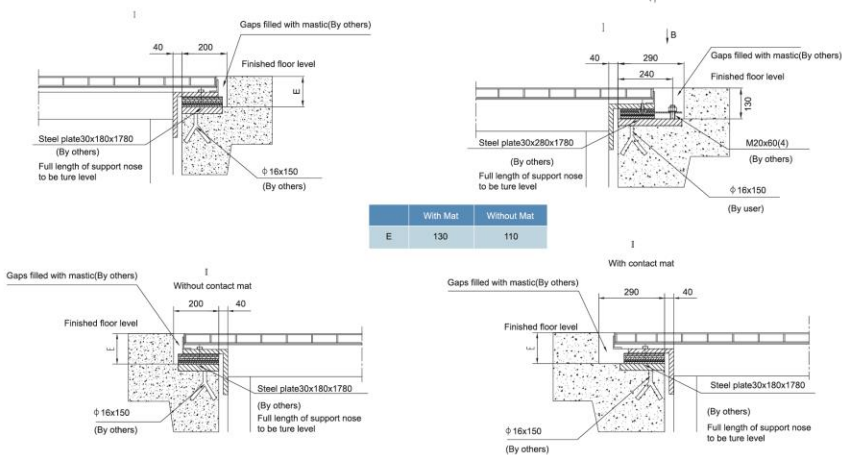
1. This technical layout only use for x021np 30° and when its rise in 3-15 metres
2. All gaps between escalator and building must be closed with elastic material.(by user)
3. For special conditions such as extended free span exterior cladding exceeding 200 n/m². Wind loads or earthquake loads please contact CLC.
4. TRUSEXU is the extension length for upper landing.
5. TRUSEXL is the extension length for lower landing.
6. When the escalator is equipped with EM-H2 machine or VF inverter, it should extend the truss LU by 500mm at least.
7. When two escalators are arranged as scissors and the customer calls for ends in one level, then lower landing's extension should be (trusexl+202)mm.
8. One intermediate support, 0.4XDBE≤SL1≤0.6XDBE; two intermediate supports, 0.27XDBE≤SL1&SL2≤0.4XDBE; HM1=(SL1+SL2)*tan(30°)-1384; HM2=(SL1+SL2-LI)*tan(30°)-1384.
9. Power supply cable requirement:
1) Indoor, A1, A2, B package need client provide one cable and connect directly to main power box.
2) C and D package need client provide two cables and connect directly main power box and heat power box

DIRECTLY MAIN POWER BOX AND HEAT POWER BOX	POWER	VOLTAGE	
	<380V	10mm	>380V
	P<11.7KW	16mm	30mm
	11.7<P<15KW	16mm	30mm
	15<P<20KW	25mm	30mm
	20<P<30KW	-	36mm
	30<P<37KW	-	25mm
		L=3M+D1.1	
		L=13M+D1.2	
		10mm WATERPROOF	
		10mm WATERPROOF	
		SOFT WIRE CABLE	

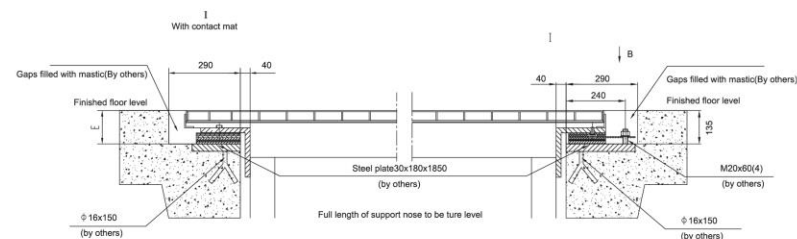
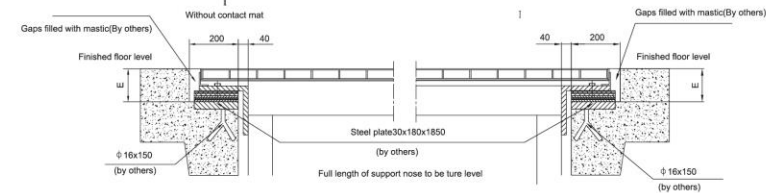
10. While clad=pit arrangement, TN2=0, definition of exterior cladding arrangement refer to xaa2832) bc.
11. If exterior cladding is done by others, distance between exterior bottom and truss bottom TN1 and TN2 would be defined according to customer's requirement.



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12/ If exterior cladding is done by others, distance between exterior bottom and truss bottom TN1 and TN2 would be defined according to customer's requirement.