



# YUANTAI CRANE

## MH Single-girder Gantry Crane Specifications



- Simple structure, installation, use, and maintenance are all convenient.
- Parts standardization, the generalization and seriation.
- Good in usability and produce conveniently

## ■ Part 1 Product Overview

### ◆ Supply scope

Our company produce gantry crane series with electric hoist mainly with the lifting capacity of 3-16t, span 12-30m, the lifting height of 12-30m, and the light (A3/A4) working duty, also can design and manufacture non-standard series hoist according to your demands.



### ◆ Main application

- (1) Equipped with CD1 MD1 etc. electric traveling hoist.
- (2) Widely used in docks, freight yards, warehouses, construction sites and other open space.
- (3) Prohibited to use in the flammable, explosive, corrosive media environment.

### ◆ Applicable scope and working conditions

This crane is used in ambient temperature of  $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$ , humidity  $\leq 85\%$ , elevation under 1000 m; the average temperature does not exceed  $+35^{\circ}\text{C}$  within 24 hours, when the average temperature exceeds  $+25^{\circ}\text{C}$ , relative humidity allowed temporarily up to 100% within 24 hours, in the temperature of  $+40^{\circ}\text{C}$ , relative humidity not more than 50%. suitable power supply is 3-ph, 380V, 50HZ (can change as user demand).

### ◆ Classification & Specification

Note: Overhead crane with electric hoist with the capacity 5t and span 15m, can be signed as MH5t-15m.

### ◆ Main Parts & Characteristics

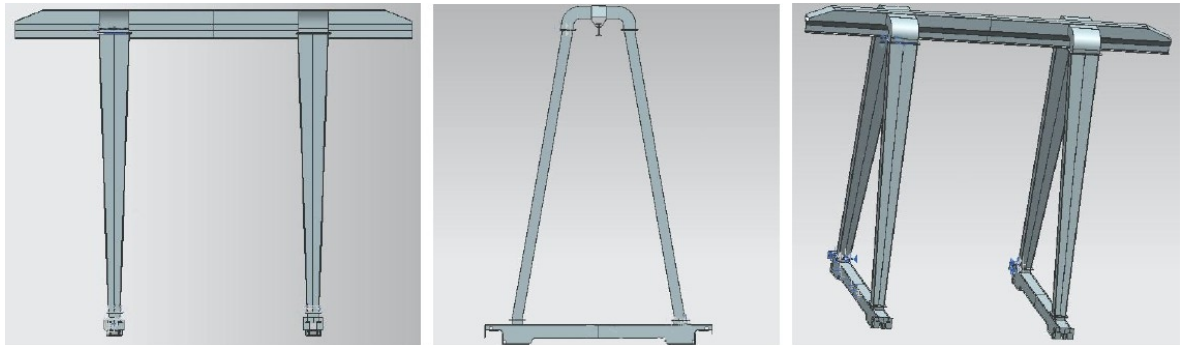
Mainly consisted of steel gantry structure, lifting mechanism(electric hoist ), crane traveling mechanism, electric equipments and other accessories. Normally when working outside, crane and electric traveling and lifting mechanism should equipped with rainproof cover.

whole structure box type and trussed type:

1. Box type structure with a simple manufacturing process, easy transportation and install, the whole structure rigidity, but with a large dead weight.
2. Trussed structure, light weight, strong wind resistance, but poor manufacturing processes, inconvenience transportation and installation .

## ■ Gantry Frame

Mainly composed of main girder, ground beam, landing legs, outrigger, ladders, platforms, driver's room, etc.



#### ▣ Main girder

1. Main bearing structure, traveling rail of electric hoist.
2. Material Q235B or Q345B ( similar as Fe37 or Fe52).
3. U-type groove, inclined plate, rib plate made by cold bending suppress steel plate weld solid web girder with i beam, or truss girder welded by steel plate group
4. Arched main beam according to request, the arch degree F should be  $(1/1000 \sim 1.4/1000) S$ , max. Arch degree be in the scope of middle span  $S/10$ .
5. There are saddle seat jointed with legs in the two sides of span position, and there are square steel plate connect with flange.
6. Buffers at the girder ends ensure trolley's safe traveling along the main girder.

#### ▣ Ground beam

1. Ground beams support the main girder and load, and also connect main girder and traveling mechanism, one of the main loading metal structures.
2. Box structure girder welded by U-type groove and steel plate group or only steel plates, with features of light structure, good rigidity, appearance and welding technology.
3. Buffers settled at the ends of ground beam

#### ▣ Legs

1. Isosceles trapezoid or right or left trapezoid box pillar welded by steel plate. Wide flanges welded at the upside and narrow flanges at the downside of the pillar increase the rigidity and stability of the gantry frame
2. Two flexible legs designed for improve crane traveling effect when span  $\geq 30m$ .
3. Bolts connect two flanges to become an "A" structure, increasing the crane's stability.
4. Bolts connect steel plate flange between legs and ground beam, simple structure, easy to install, transport and store.

#### ▣ Sollar

1. Steel tubes, steel angles bending, antiskid riffled plate on the platform, retaining plate settled at the bottom of platform; guardrail height:1050mm, the distance of two level cross bars is 350mm.
2. The inclined angle of ladder and horizontal plant is  $55^\circ$ ,  $60^\circ$  or  $65^\circ$  .

▣ Cabin room

1. Generally adopted the closed type, top of the cabin can stand 2.5KN dead load at least.
2. The head room height inside the cabin  $\geq$  1.8m.

▣ Lifting Mechanism (see electric hoist specifications)

▣ Crane Traveling Mechanism

Drive separately, composed of traveling motor, traveling reducer, wheel group, etc.

## ■ A Structure Mode

▣ Motor

ZDY series motor with brake inside used for crane traveling, reliable brake.

▣ Reducer

LDAC or LDHC type vertical trinity reducer, open gear drive, small width, without coupling.

▣ Wheel

1. LDA type wheels, double wheel edges, efficiently avoid failures
2. Baffles at the end of ground beam connected by bolts, easy to dismantle, install and maintain.



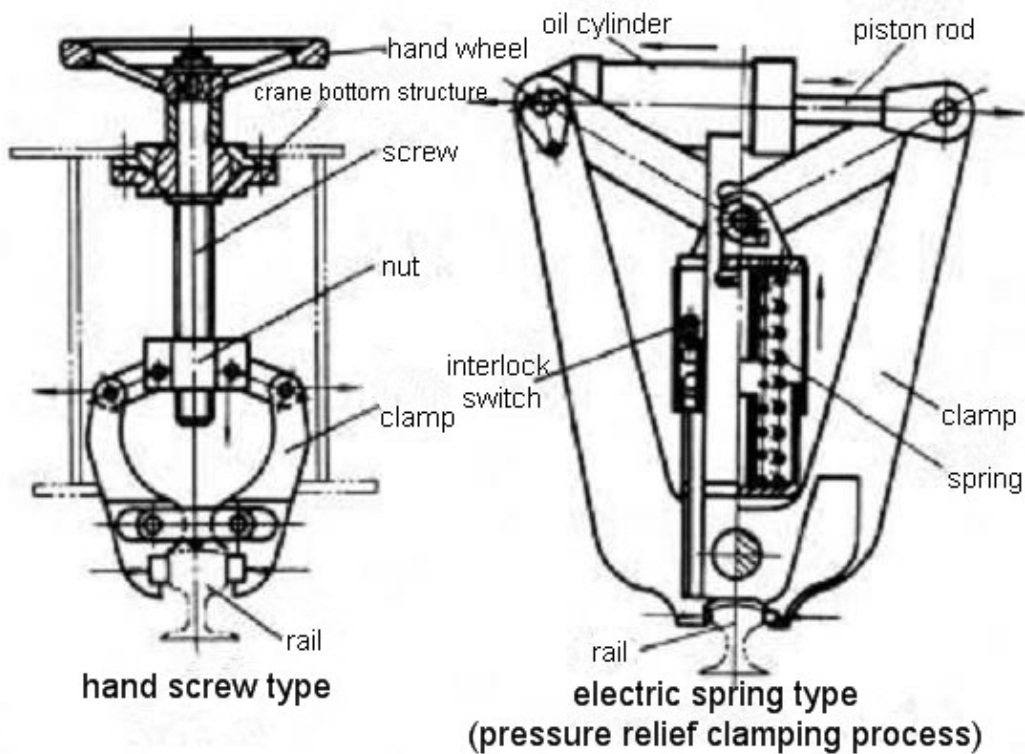
▣ Rail sweeper

The rail sweeper sweep the barriers on the rail to ensure the safe travel.

▣ Rail clamp

1. Rail clamp installed outdoor avoid crane moving due to force;
2. The switch on the clamp avoid the damage due to driving crane when clamped.





Rail Clamp Structure of Crane

■ **B Structure Mode ( the others like A mode except reducer)**

▣ Reducer

LDA or LDH type trinity reducer, open gear drive, small width, without coupling.



LDA(LDH) reducer

■ **C Structure Mode**

Drive device simple structure, low noise, safe and reliable, easy to install and maintain.

▣ Motor

1. YZR series wound rotor type motor for hoist and metallurgy used for crane traveling mechanism.
2. Strong overload capacity, large output torque.

▣ Reducer

1. Separately drive, ZSC or ZSC(A) type vertical reducer.
2. Saving space, large ratio.
3. High transmission efficiency, smooth travel, low noise, easy to install and dismantle.

▣ Brake

1. YWZ type electric hydraulic block brake installed between traveling motor and reducer, smooth braking, high operating frequency, safe and reliable.



2. Self-lubricating bearing in main swing hinge points, High transmission efficiency, long service life. Card plug-in brake rim or brake tile without asbestos, safe, easy to replace and green initiative.

▣ Coupling

Couplings connect brake, reducer and motor together.

▣ Wheel

Double edges cylindrical tread wheel, seldom offset and slip, 45 degree division structure, easy to dismantle, install and maintain.

▣ Buffer

1. JHQ series polyurethane buffer at the ends of ground beam, can transform impact kinetic energy to elastic potential energy quickly.

2. Reliable hardness and impact elasticity, good restorability.

3. Both high and low temperature resistance, insulation, ensure the crane's safe travel.

▣ Rail sweeper (same as A)

▣ Rail clamp (same as A)

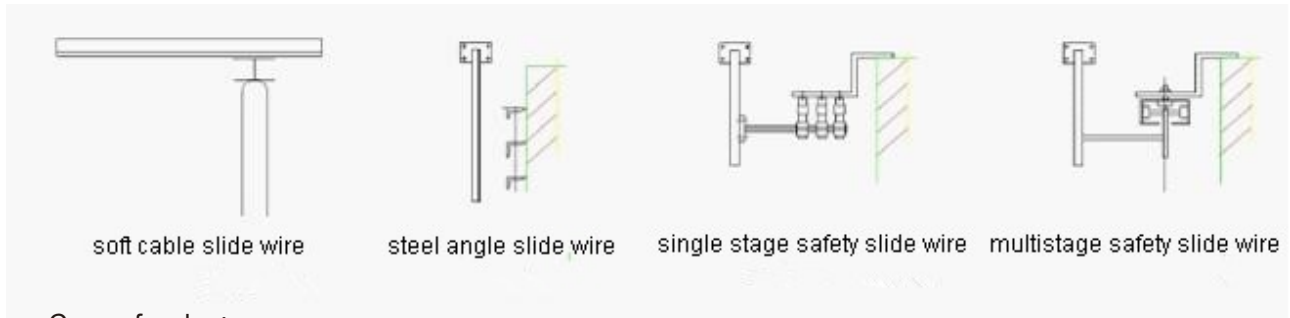


▣ Electrics

1. Pressured type load lifting limiter, set alarm point, sensor settled on wire rope directly remaining original rope structure, control instrument could be installed together with sensor, or installed in electrical cabinet or other parts separately.

2. Easy to install and debug, steady quality, intelligent, small size, etc.

▶ Power supply mode



Crane feeder:

- (1) safety slide wire
- (2) soft cable
- (3) cable drum

Trolley feeder:

- (1) cable pulley

The slideway of soft cable and cable pulley could be wire rope slideway, I beam slideway, or deformed steel slideway.

▶ Wire and cable

- 1. Wire and cable with Copper, multistrand and insulating sheath used all over the crane.
- 2. Multistrand single cable, whose cross area of control wire  $\geq 1.5\text{mm}^2$  and  $1.0\text{mm}^2$  multistrand multicore cable, cross area of power line  $\geq 2.5\text{mm}^2$
- 3. The cables set in trunkings or tubes with thickness of  $1.5\text{mm}\sim 2\text{mm}$ .
- 4. Protection devices at the parts of mechanical injury, chemical corrosion or oil erosion.

▶ Control mode

- 1. Pendant: control the actions of all mechanisms by pressing the buttons.
  - 2. Remote control: control the actions of all mechanisms with industrial remote control.
  - 3. Cabin control: control the actions of all mechanisms with the buttons, master switches, cam controller or linkage in the cabin.
- The crane could also have two sets control devices, such as: pendant + remote control or cabin + remote control. Two control modes could not be used together for safety.

## ■ Electric protection system

▶ Short circuit protection

Automatic air-breaker switch in main power circuit as short circuit protection of the crane control circuit.

▶ Voltage-loss protection

- ▶ Circuit structure has Voltage-loss protect function, the start button must be repressed to restart the crane when power restoration after break in case of the crane automatic operating.

▶▶ Emergency power switch

1. Rotating reset type emergency power switch like a red mushroom used for switching off power quickly in emergency condition.
2. Emergency power switch set in convenient place.

▶▶ Overload limiter

1. Overload limiter will send hint alarm signal when the load reach 90% rated capacity.
2. The power for lifting will be cut together with prohibitive alarm signal when reach 110% rated capacity.
3. The sensor linked with control box, moistureproof and anti-seismic, anti-interference.

▶▶ Position limiter

1. Fire limiter in lifting mechanism as the switch to limit the lifting height, at the same time, protect the controller.
2. Traveling limiter in crane traveling mechanism, composed of traveling limit switch on the crane and safety rule at the place get out of the crane travel, ensure safe travel of crane.
3. Wind-proof rail clamp is installed at one end of ground beam when used outside. Limit switch on rail clamp interlocks with main power switch, that is to say crane could not start when it is locked on the rail by rail clamp.

▶▶ Zero position and interlock protection

1. Cabin control crane has zero position and interlock protect function
2. Zero position protection prevent the motor automatic operating when restore power after power off, avoid accidents.
3. Interlocking of door and switches avoid accidents like people or objects fall down from the door when the crane start suddenly as the door open.

▶▶ Three-phase fault & voltage fault protection

Comprehensive protection in circuit system will cut off main power automatically when three phase fault or voltage fault in case of damaging people and equipments.

▶▶ Ground protection

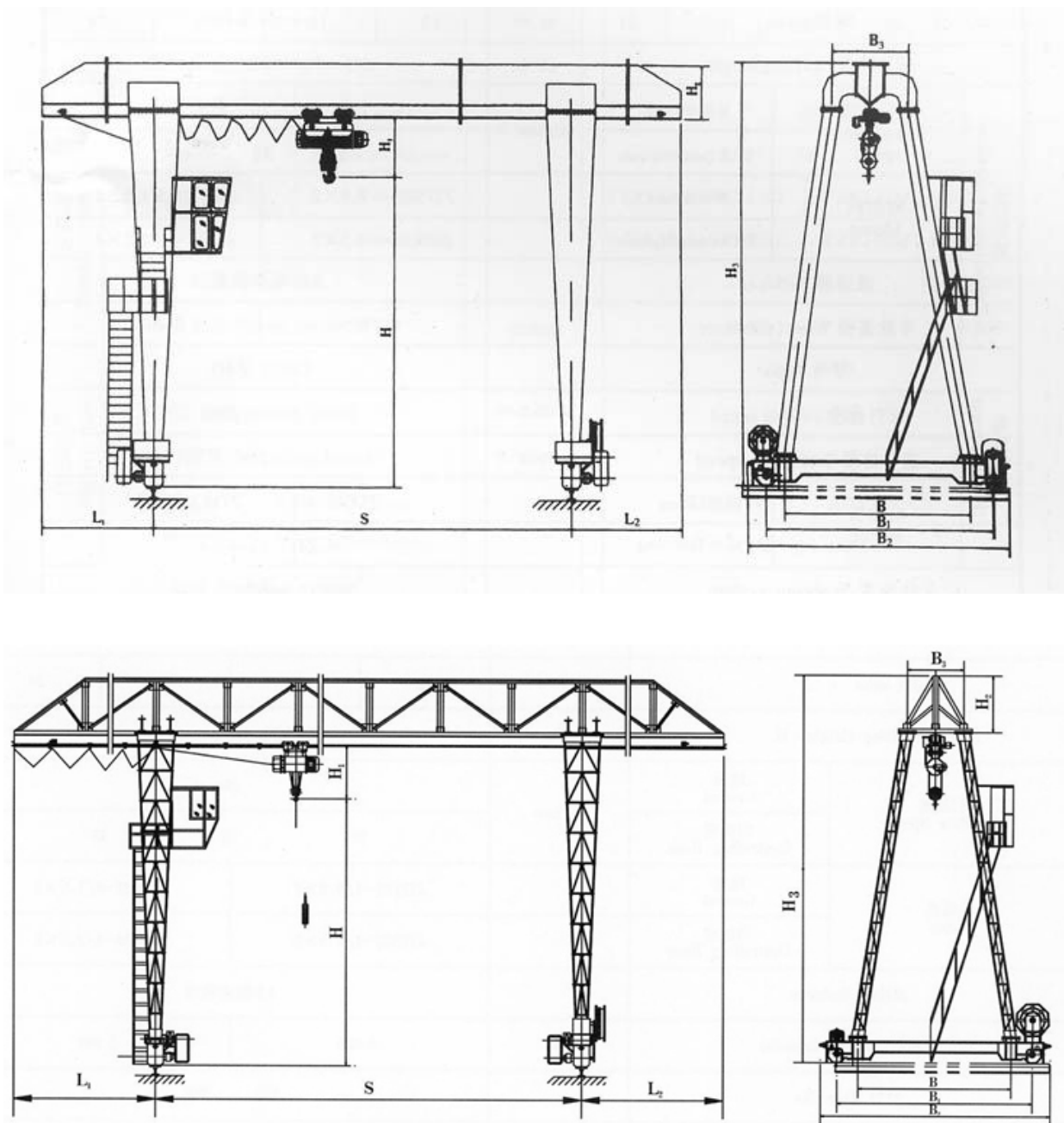
Metacor of crane and metal shell, raceway, low side of transformer of electric equipments all have grounding. Total grounding resistance  $\leq 4\Omega$ , and the crane rails could be as ground wire. Insulation resistance to ground  $\geq 1M\Omega$  at normal temperature (it is measure value of 500V megger at normal temperature).





■ **Part 2** Drawing

◆ **The structure sketch**



## Part 3 Parameters

MH Electric Hoist (box-type) Gantry Crane 3t						
Span	S ( m )	12	16	20	24	
Lifting height	m	9	9	9	9	
Lifting speed	m/min	8	8	8	8	
Trolley speed	m/min	20	20	20	20	
Crane speed	m/min	20	20	20	20	
Lifting motor	kw	4.5	4.5	4.5	4.5	
Trolley motor	kw	0.4	0.4	0.4	0.4	
Total weight	kg	8700	9900	12600	14300	
Max Wheel Load	KN	42	46	50	54	
Track		P24	P24	P24	P24	
Main dimension	mm	12	16	20	24	
Rail top to main top	H	10635	10685	10785	10885	
Rail top to hook centre	W	6000	6000	7000	7000	
Wheel base	B	6400	6400	7500	7500	
Crane width	S1	850	850	850	850	
Hook left limitation	S2	1300	1300	1300	1300	
Left cantilever	L1	3000	4000	5000	6000	
Right cantilever	L2	3000	4000	5000	6000	

MH Electric Hoist (box-type) Gantry Crane 5t						
Span	S ( m )	12	16	20	24	30
Lifting height	m	9	9	9	9	9
Lifting speed	m/min	8	8	8	8	8
Trolley speed	m/min	20	20	20	20	20
Crane speed	m/min	20	20	20	20	20
Lifting motor	kw	7.5	7.5	7.5	7.5	7.5
Trolley motor	kw	0.8	0.8	0.8	0.8	0.8
Total weight	kg	9800	11200	15200	20400	24000
Max Wheel Load	KN	59	67	75	83	96
Track		P24	P24	P38	P38	P38
Main dimension	mm	12	16	20	24	30
Rail top to main top	H	10960	11060	11160	11310	11460
Wheel base	W	6500	6500	7500	7500	7500
Crane width	B	7000	7000	8100	8100	8100
Hook left limitation	S1	900	900	900	900	900
Hook right limitation	S2	1350	1350	1350	1350	1350
Left cantilever	L1	3000	4000	5000	6000	7500
Right cantilever	L2	3000	4000	5000	6000	7500

MH Electric Hoist (box-type) Gantry Crane 10t						
Span	S ( m )	12	16	20	24	30
Lifting height	m	9	9	9	9	9
Lifting speed	m/min	7	7	7	7	7
Trolley speed	m/min	20	20	20	20	20
Crane speed	m/min	20	20	20	20	20
Lifting motor	kw	13	13	13	13	13
Trolley motor	kw	0.8	0.8	0.8	0.8	0.8
Total weight	kg	16100	18700	21600	26600	30100
Max Wheel Load	KN	102	110	118	126	149
Track		P38	P38	P43	P43	P43
Main dimension	mm	12	16	20	24	30
Rail top to main top	H	11350	11450	11550	11650	12250
Wheel base	W	6500	6500	7500	7500	7500
Crane width	B	7100	7100	8100	8100	8100
Hook left limitation	S1	1300	1300	1300	1300	1300
Hook right limitation	S2	1900	1900	1900	1900	1900
Left cantilever	L1	3000	4000	5000	6000	7500
Right cantilever	L2	3000	4000	5000	6000	7500

MH Electric Hoist (box-type) Gantry Crane 16t						
Span	S ( m )	12	16	20	24	30
Lifting height	m	9	9	9	9	9
Lifting speed	m/min	3.5	3.5	3.5	3.5	3.5
Trolley speed	m/min	18	18	18	18	18
Crane speed	m/min	20	20	20	20	20
Lifting motor	kw	13	13	13	13	13
Trolley motor	kw	0.8	0.8	0.8	0.8	0.8
Total weight	kg	18200	20700	25500	28100	32000
Max Wheel Load	KN	150	159	164	176	190
Track		P38	P38	P43	P43	P43
Main dimension	mm	12	16	20	24	30
Rail top to main top	H	12500	12600	12700	12800	13400
Wheel base	W	7000	7000	8500	8500	8500
Crane width	B	7500	7500	9200	9200	9200
Hook left limitation	S1	1300	1300	1300	1300	1300
Hook right limitation	S2	1900	1900	1900	1900	1900
Left cantilever	L1	3000	4000	5000	6000	6000
Right cantilever	L2	3000	4000	5000	6000	6000

Note: Control mode for ground operation.

## ■ Part 4 Paint Coating & Appearance of Crane

1. Surface derusting processing for steel plate before welded;
2. The derusting quality level of main girder, legs, upper beam and lower beam should reach Sa2 1/2 or St3 level of GB/T8923 at least, other parts should reach Sa2 or St2 level;
3. Painting the crane color as customer requirement before leaving factory. Coating thickness of mechanisms  $\geq 50 \mu\text{m}$  after drying; paint film thickness of metal structure part:  $25 \mu\text{m} \sim 35 \mu\text{m}$  per layer, total:  $75 \mu\text{m} \sim 105 \mu\text{m}$ . Exposed surface without coating should take antirust measures.

## ■ Part 5 Relevant Product Standards

Our company carry out the contract equipment design, manufacturing, testing according to the following standards, procedures and corresponding provisions. In the following standards, we give priority to the national standard and (former) Ministry of Machinery Standard.

1. GB / T 3811-2008 "Design Rules for Cranes"
2. GB of 6067-1985 "Crane Safety Regulations"
3. JB / T 5663-2008 "Electric Hoist Gantry Crane"
4. JB / T 9008-2004 "Wire Rope Electric Hoist"
5. GB 5905-1986 "Crane Electric Control Equipment"



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Tips:

You can use the phone dimensional code recognition software to scan the right side of the two-dimensional code, to quickly and easily access our web site for more information.