YUANTAI CRANE

Semi-gantry Crane with Electric Hoist Specification

- Light structure, beautiful shape.
- Good technology, long life.
- Flexible and smooth operation, safe and reliable.
- Widely application, high cost performance.

Henan Yuantai Crane Machinery Import&Export Co.,Ltd.

Part 1 Introduction

Overall Features

(1) Light structure, beautiful shape
(2) Good technology, long life
(3) Flexible and smooth operation, safe and reliable
(4) Widely application, high cost performance

Supply Scope

Lifting capacity 2t-10t, span 10m-20m, lifting height 1m-30m, working duty is light (A3, A4). Also supply non-standard products according to your requirements.

Applications

(1) This is single girder semi-gantry crane which uses electric hoist as the lifting mechanism.
(2) Applied to outdoor place such as station, wharf, warehouse, yard, construction site, cement products factory, mechanical and structural assembly plant, hydropower station, etc. for lifting, transporting, loading, etc.
(3) Forbid to use in the conditions as easily combustible, explosive, corrosive (acid, alkali, plating, steam, etc.).

Conditions

Working ambient -25℃～+40℃, moisture ≤85%, altitude below 1000 meters, power supply 380V, 50Hz, 3phases (Adjustable according to customer's different requirement).

Specification and Description

Note: For example, BMH5t-10.5 m means semi-gantry crane with electric hoist--lifting capacity 5t and span 10.5m.

Structure and Characteristics

Mainly consists of bridge, crane traveling mechanism, lifting mechanism and electrical system, etc.

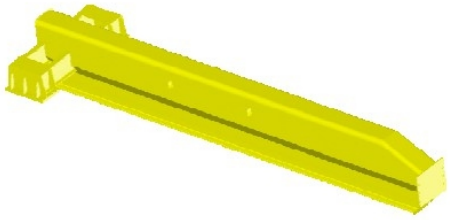
Bridge

Consist of main girder, upper beam, bottom beam, landing leg, ladder landing, etc.

Main Girder

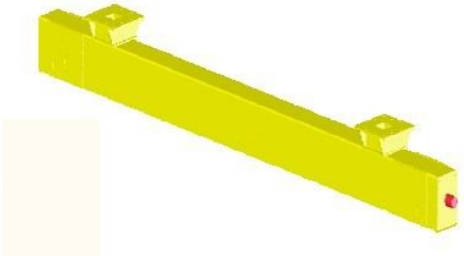
1. Main girder is the major bearing carrier of hoist style crane and also the runway of the electric hoist.
2. Welded by U-steel and I-beam which made of pressed steel.
3. Steel material is Q235B or Q345B (similar to foreign Fe37 or Fe52).
4. Bridge camber (F) is (1/1000～1.4/1000) S. Max. camber is located in the middle of span within S/10.
5. Electric hoist trolley travels on the flange of the I beam. When the hoist located in the middle of main girder, the full load natural frequency should no less than 2Hz.

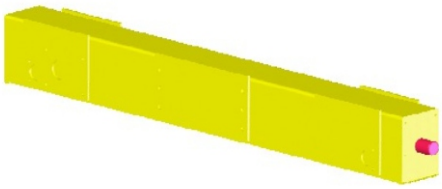
6. The crane bumpers are installed on the both ends of the main girder to ensure the safety of trolley travelling.



- Upper beam, bottom beam

1. Upper and bottom beams are the main basic support of the main girder and loading and also is the link between main girder and travelling mechanism. It is one of the principal bearing carrier of crane's metal structure.
2. Box structure is mainly welded by steel plate with the character of light, rigid, nice and good welding technology.
3. Bumpers are installed on the bottom of beam.
4. Upper beam locate above the upper rail and the bottom beam under the bottom rail.
5. Generally, the bottom beam is longer than upper beam and the length depends on the length and angle of landing leg.





- Landing Leg

1. Consists of top flange, bottom flange and box structural support beams welded by steel plate.
2. The landing leg become conversion section structure which is big end up at the result of big top flange and small bottom flange. This structure can bear the loading of vertical and horizontal direction effectively.
3. Main girder and upper end beam are connected with bolt to modify the flange hanging connect structure. Simple structure, easy installation and convenient to transport and storage.
4. Main girder and the two legs which symmetrically arranged on the two sides of it are connected with bolts to fasten the two flanges. And the space between two legs become wide below narrow with a certain angle to shape kind of "A" structure, thus improve the stability.
5. The landing leg and bottom beam are connected with bolt.

- Ladder Landing

Welded by angle steel, flat steel, round steel, etc. Connected with bolts and the angle steel that welded on the landing leg to avoid on-site welding. Easy assembly.

Crane Travelling Mechanism

Adopt separate driven, mainly consist of travelling motor, travelling reducer, wheel group, etc. The whole equipment is simple structure, small in size, low noise, pretty appearance, safe and reliable, also easy installation and maintenance.

- Motor

  Adopt ZDY series brake type motor, reliable inner brake. Located above the bottom beam to save space.

- Reducer

  Adopt LDAC or LDHC type vertical triangle reducer with open gear drive. Small width, with no coupling.

- Wheel

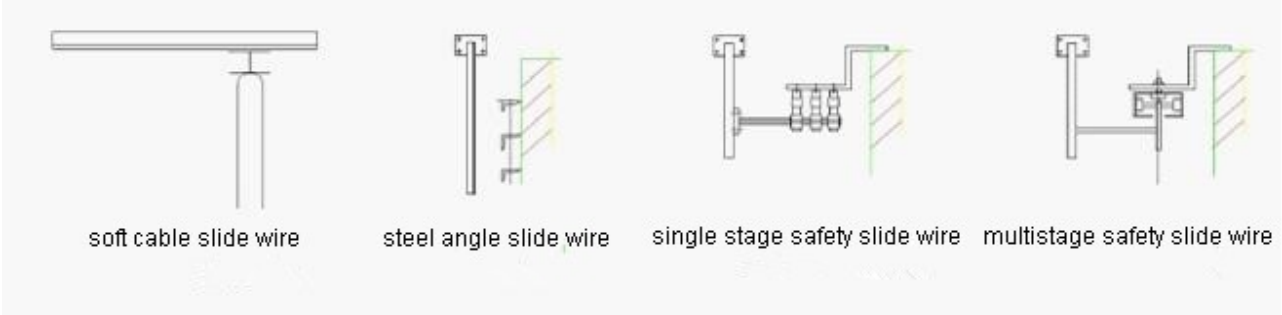
  1. Adopt LDA type wheel which is double wheel rim and hard to appear the accident that wheel fall from rail when climb.
  2. The baffle on the ends of beam connected with bolts. Detachable, easy to installation and maintenance.

- Lfting Mechanism (Details see the electrical hoist)

- Electrical Parts

  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 allover the crane.
2. Multistrand single cable, whose cross area of control wire≥1.5mm2 and 1.0mm2 multistrand multicore cable, cross area of power line≥2.5mm2 .
3. The cables set in trunkings or tubes with thickness of 1.5mm~2mm.
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.

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

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 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

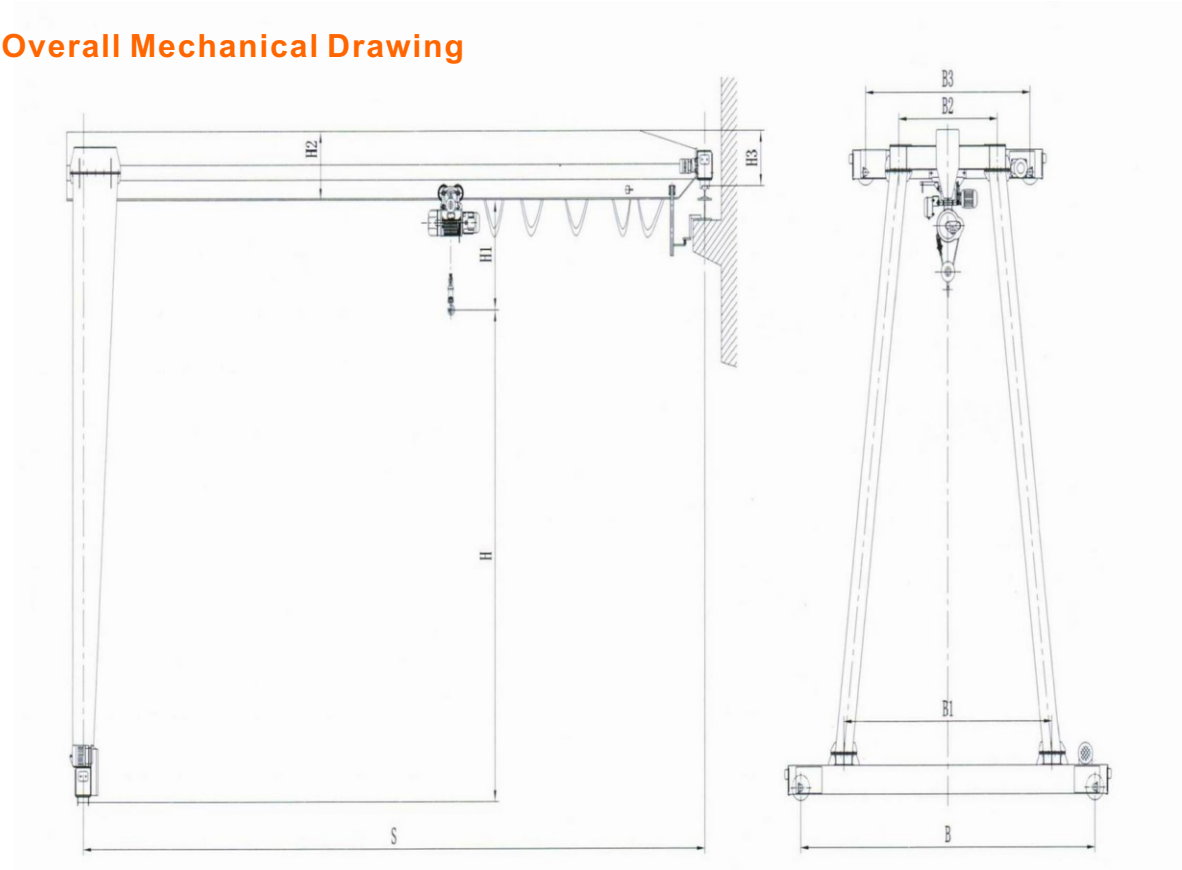
Comprehensive protection in circuit system will cut off main power automatically when three phase fault or voltage fault in case of damaging people and equipments.

- Ground protection

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

Part 2 Drawing

Overall Mechanical Drawing



Part 3 Parameters

起重量 Lifting capacity			t	2			
跨度 Span			m	10	12	16	20
起升高度 Lifting Height			m	6			
运行机构 Travellin mechanismg	运行速度 Travelling Speed	地面 Ground	m/min	20			
		司机室 Controling Room		20		30	
	电动机	地面 Ground		ZDY(D)21-4/0.8×2		ZDY_1(D)22-4/1.5×2	
		司机室 Controling Room		ZDR100-4(D)1.5×2			
	减速器 Reducer			$LDAC_1$ LDA_1			
	车轮直径 Wheel diameter		mm	ϕ270			
电动葫芦 Electrical hoist	型号 Type			CD_1 MD_1			
	起升速度 Lifting speed		m/min	8 8/0.8			
	运行速度 Travelling speed		m/min	20(30)			
	电动机 Model	起升 Lifting		$ZD_1$31-4/3		$ZDS_1$0.4/3	
		运行 Travelling		$ZDY_1$12-4/0.4			
工作制度 working system				A4			
荐用钢轨 Steel track recommended				P24			
电源 Power source				三相交流 380V 50Hz			
起重机质量 The Crane Weight		地面 Ground	Kg	3250	3550	4050	5350
		司机室 Controling Room	Kg	4050	4350	4850	6150
最大轮压 Max Wheel Load			KN	14	19	27	35
基本尺寸 Basic Dimensions		H_1	mm	1020			
		H_2		550	595	700	900
		H_3		490	490	580	745
		B		4400			
		B_1		3300			
		B_2		1400			
		B_3		2000		2500	3000

起重量 Lifting capacity			t	3			
跨度 Span			m	10	12	16	20
起升高度 Lifting Height			m	6			
运行机构 Travellin mechanism	运行速度 Travelling Speed	地面 Ground	m/min	20			
		司机室 Controling Room		20		30	
	电动机	地面 Ground		$ZDY(D)_1$21-4/0.8×2		$ZDY(D)_1$22-4/1.5×2	
		司机室 Controling Room		ZDR100-4(D)1.5×2			
	减速器 Reducer			LDAC1 LDA1			
	车轮直径 Wheel diameter		mm	φ270			
电动葫芦 Electrical hoist	型号 Type			CD_1 MD_1			
	起升速度 Lifting speed		m/min	8 8/0.8			
	运行速度 Travelling speed		m/min	20（30）			
	电动机 Model	起升 Lifting		$ZD_1$32-4/4.5		$ZDS_1$0.4/4.5	
		运行 Travelling		$ZDY_1$12-4/0.4			
工作制度 working system				A4			
荐用钢轨 Steel track recommended				P24			
电源 Power source				三相交流 380V 50Hz			
起重机质量 The Crane Weight	地面 Ground		Kg	3500	3850	4550	6150
	司机室 Controling Room		Kg	4300	4650	5350	6950
最大轮压 Max Wheel Load			KN	28	32	35	39
基本尺寸 Basic Dimensions	H_1		mm	1150			
	H_2			650	700	800	1000
	H_3			530	580	660	820
	B			4400			
	B_1			3300			
	B_2			1400			
	B_3			2000		2500	3000

起重量 Lifting capacity			t	5			
跨度 Span			m	10	12	16	20
起升高度 Lifting Height			m	6			
运行机构 Travellin mechanismg	运行速度 Travelling Speed	地面 Ground	m/min	20			
		司机室 Controling Room		20		30	
	电动机	地面 Ground		ZDY(D)$_1$21-4/0.8×2		ZDY(D)$_1$22-4/1.5×2	
		司机室 Controling Room		ZDR100-4(D)1.5×2			
	减速器 Reducer			LDAC1 LDA1			
	车轮直径 Wheel diameter		mm	ϕ270			
电动葫芦 Electrical hoist	型号 Type			CD$_1$ MD$_1$			
	起升速度 Lifting speed		m/min	8 8/0.8			
	运行速度 Travelling speed		m/min	20（30）			
	电动机 Model	起升 Lifting		ZD$_1$41-4/7.5 ZDS$_1$0.8/7.5			
		运行 Travelling		ZDY$_1$21-4/0.8			
工作制度 working system				A4			
荐用钢轨 Steel track recommended				P24 p38			
电源 Power source				三相交流 380V 50Hz			
起重机质量 The Crane Weight	地面 Ground		Kg	4300	4750	5500	6900
	司机室 Controling Room		Kg	5100	5500	6300	7700
最大轮压 Max Wheel Load			KN	37/44	40/47	43/50	46/53
基本尺寸 Basic Dimensions	H_1		mm	1320			
	H_2			720	800	900	1100
	H_3			580	660	745	875
	B			4600			
	B_1			3500			
	B_2			1500			
	B_3			2000		2500	3000

起重量 Lifting capacity			t	10			
跨度 Span			m	10	12	16	20
起升高度 Lifting Height			m	6			
运行机构 Travellin mechanismg	运行速度 Travelling Speed	地面 Ground	m/min	20			
		司机室 Controling Room		20		30	
	电动机	地面 Ground		ZDY(D)122-4/1.5×2		ZDY,31S-4/2.2×2	
		司机室 Controling Room		ZDR100-4/1.5×2		ZDR112L1-4/2.1×2	
	减速器 Reducer			LDA1 LDAC1		LDH LDHC	
	车轮直径 Wheel diameter		mm	ϕ270		ϕ400	
电动葫芦 Electrical hoist	型号 Type			CD, MD,			
	起升速度 Lifting speed		m/min	7 7/0.7			
	运行速度 Travelling speed		m/min	20（30）			
	电动机 Model	起升 Lifting		ZD,51-4/13 ZDS,1.5/13			
		运行 Travelling		ZDY,21-4/0.8×2			
工作制度 working system				A4			
荐用钢轨 Steel track Recommended				p38			
电源 Power source				三相交流 380V 50Hz			
起重机质量 The Crane Weight	地面 Ground		Kg	6600	7500	8350	10650
	司机室 Controling Room		Kg	7400	8300	9150	11450
最大轮压 Max Wheel Load			KN	78	85	94	103
基本尺寸 Basic Dimensions	H_1		mm	1670			
	H_2			900	1000	1100	1250
	H_3			720	865	920	970
	B			4800	5200		
	B_1			3700			
	B_2			1600			
	B_3			2000		2500	3000

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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.