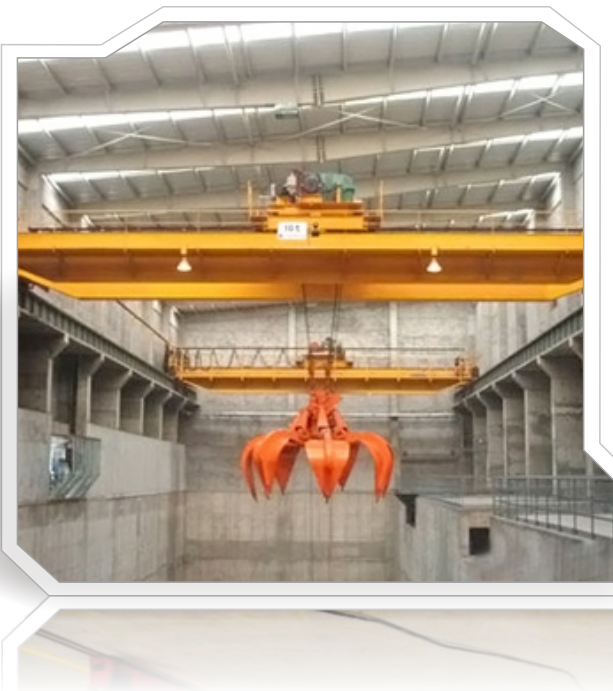




# YUANTAI CRANE

## Overhead Crane with Grab Specification



- Special lifting equipment for bulk and granular materials
- Simple structure, reliable, high efficiency
- Good production technology, long using life
- Large load capacity, high working duty

## Part 1 Introduction

### ◆ Overall Features

- (1) Special lifting equipment for bulk and granular materials
- (2) Simple structure, reliable, high efficiency
- (3) Large load capacity, high working duty
- (4) Can choose different types of grab according to different kinds of materials.



### ◆ Supply Scope

Our company mainly produce grab overhead crane series with lifting capacity of 5-20t, lifting height of 1-30m, and A6 of medium working duty, also can design and manufacture non-standard series hoist according to your demands.

### ◆ Applications

- (1) Widely used for loading and unloading and transferring of bulk materials in Power plants, garages, workshops, docks, etc.
- (2) The rated capacity including the grab's weight.
- (3) Banned to use in flammable, explosive, corrosive media environment.

### ◆ Applicable Scope & Working Conditions

This crane is used in ambient temperature of  $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$ , humidity  $\leq 85\%$ , elevation is under 1000m, power supply is 3-ph, 380V, 50HZ (can change as user demand).

### ◆ Classification and Product Specifications

Note: Grab Overhead crane with the capacity 5t and span 10.5m, can be signed as QZ5t-10.5m.

### ◆ Main Structure and Characters

mainly composed by 5 parts: bridge, trolley and crane traveling mechanism, electric equipment, grab, and other accessories.

#### ■ Bridge

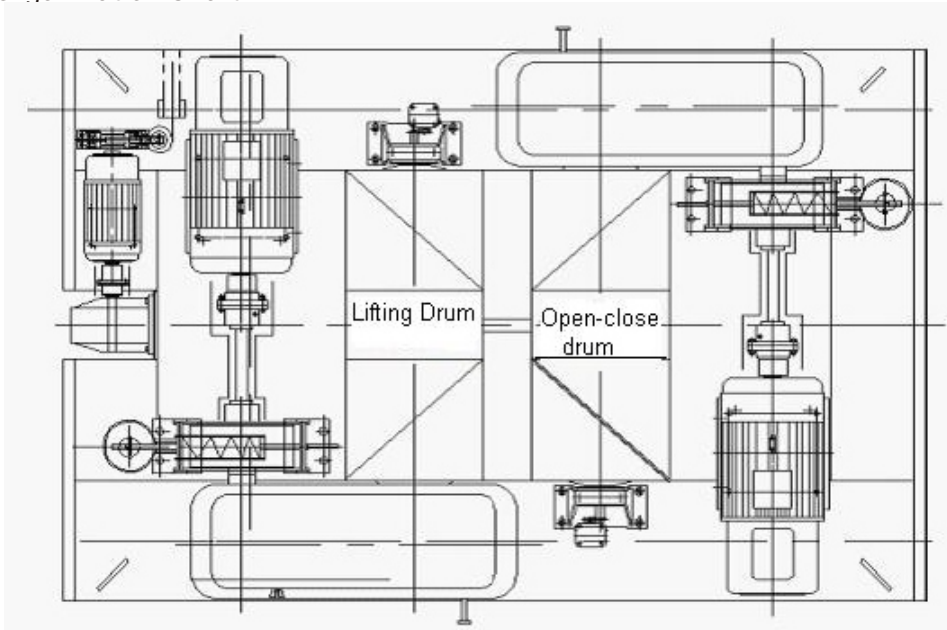
1. Double girder, welding box beam, national standard camber;
2. Q235 or Q345 steel material (same as Fe37 or Fe52 steel in abroad);
3. The main weld adopt automatic submerged arc welding, NDT;
4. End carriages connecting by high strength bolts and nuts, convenient in transportation;
5. With the uniform, fine, bright, complete and consistent painting color;
6. With painting thickness of  $25 \sim 35\mu\text{m}$  each layer and whole thickness of  $75 \sim 105\mu\text{m}$ .



#### ■ Trolley

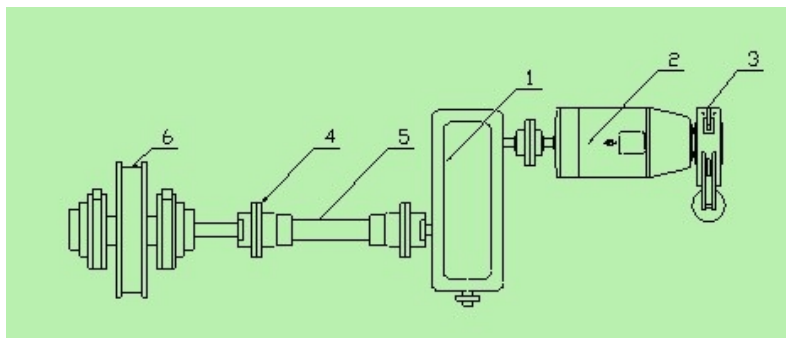
1. Lifting mechanism is composed by motor, brake, coupling, transmission shaft, reducer, pulley blocks, wire rope, and other accessories;

2. Crane dedicated YZR type wound motor, insulation class F;
3. Closed Hydraulic push rod type brakes, which closed when machine not working, and opened by brake releases device when working;
4. Roll casting reel, wire rope angle  $<3.5^\circ$ , with 3 laps and 2 laps fixed circle at both ends of reel;
5. Crane dedicated 6W(19) wire rope, line contact type, high strength, long life;
6. Rotating limit switch set on spindle nose of the winding drum to keep the safe lifting;
7. Specific Organization Chart



■ Crane traveling mechanism

1. There are four traveling wheels installed on each side of the two end beams. Two of them are active wheels and the others are driven ones. The driving device of active wheels is installed on the walkway. Here adopt two sets of symmetrical independent driving devices and we call it respectively driven.
2. The reducer adopts circular-arc gear one of which load capacity is higher than involute gear reducer of the same type. All of the mechanisms adopt rolling bearing with A.C. electromagnetic block brake.
3. Driving devices include 1. Reducer; 2. Motor; 3. Brake; 4. Coupling; 5. Coupling; 6. Wheels, etc are shown in the mechanical drawing as follows:



4. The connection of the mechanism parts all adopt gear coupling. In this way, it can work well by gear coupling compensated even there is an error caused in manufacture and installation or deflection between the parts caused by bridge deformation when loading.

5.Active and driven wheel axle support on the angular bearing box for easy assembly and maintenance.

### ■ Electric equipment

- 1.Electric control box layout is reasonable, easy to repair
- 2.Security trolley line or angle steel trolley line
- 3.External cable are equipped with mark line number
- 4.Trolley moving's power is supplied by flat cable
- 5.The conductor is I steel or C shape sliding line
- 6.Safety sliding touch line with high conductive rate and low pressure drop; current collector with high speed.
- 7.Lifting and crane can be independently controlled; also can work separately or together.



### ■ Grabs

- 1.Four-rope grab、 double-rope grab
- 2.Orange-petal grab、 electric & hydraulic grabs
- 3.Straw grab, wood grab, and other rich series varieties



### ■ Grab Crane Operating Principle

- 1.Grab is the lifting appliance using jaws open and close to load or unload the bulk materials.
- 2.According to the operating feature, grab can be divided into 3 kinds, double-rope, single-rope, and motor grab. The most commonly used is double-rope grab.
- 3.According to the packing density of the materials, grab can be divided into light (such as to crawl grain), medium (such as to crawl gravel) and heavy (such as to grab iron ore)
- 4.According to the jaw plate number, it can be divided into dual jaw plate grab and multitude jaw plate grab, the most commonly used is dual jaw plate grab
- 5.customers should adopt the multitude jaw plate grab to crawl the lump ores, scrap iron and scrap, because with the characteristics of more claws and notch tip, it can easily insert the stockpile and do a good crawl.
- 6.The crane choose the dual winding drums four rope grab as its crawl device, structure simple and reliable.

(1) Mainly consisted of four parts: 1.head 2. Lifting beams 3.pull bar 4. bucket

(2) Trolley equipped with lifting winding drum and opening and closing winding drum, each set of rolls leads to two wire rope, including two as a group in both ends of grab balance frame for support, and another set of wire rope going through the upper beam pulley and under beam pulley to form a pulley set, making bucket Ministry open and close.

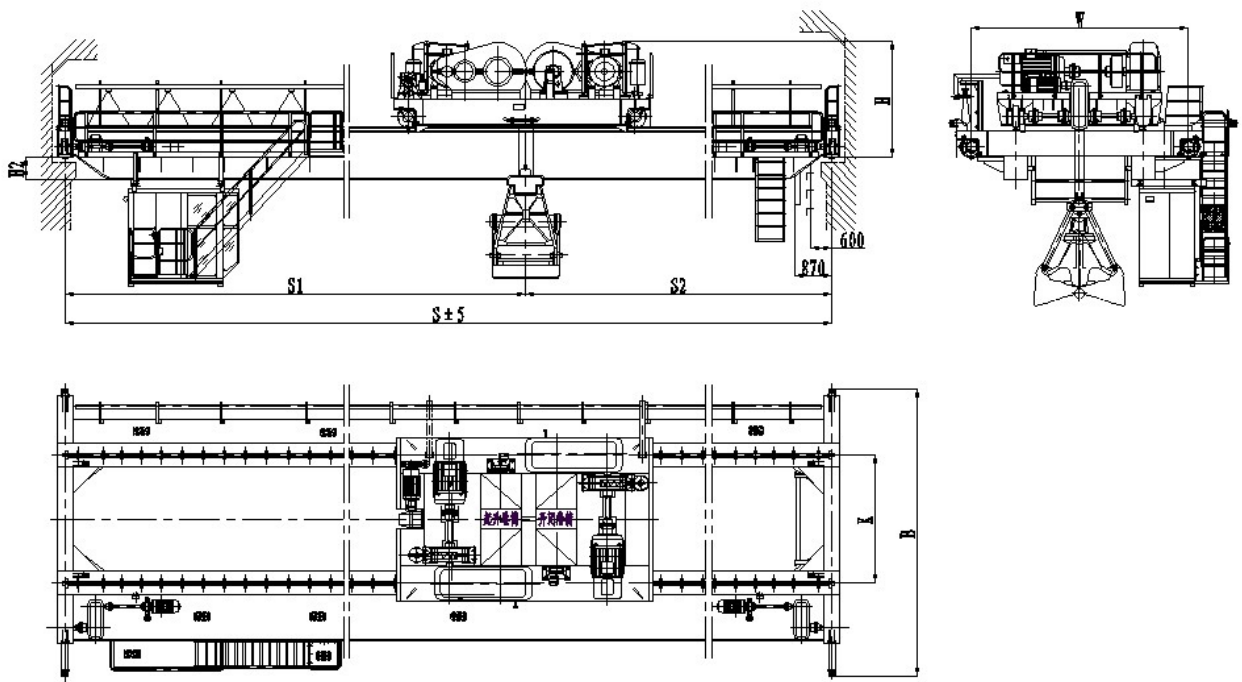
(4) When start working, grab lifting suitable position by support wire rope, then put down close wire rope, dead weight below lifting beam compel in the center of lifting beam below grab open the grab, when the two auricular plate collision, it is the max limite opened. When open grab, the center distance increased between up lifting beam pulley and down lifting beam, then drop the support wire rope, make the opened grab fall on the slack stack, and then furl close wire rope, make the center distance between up lifting beam pulley and down lifting beam pulley resume primary

position, the course of snatch material has been finished. The closed grab fill full of material, at last lifting the close wire rope, whole grab is lifted, static crane be removed need yard, open grab unload the snatch material.

7. Customers should highlight the require when crawling underwater materials or special materials and when using outside you should set rainproof devices.

## Part 2 Drawing

### Machine Organization Chart



Note: grab has two opening directions, vertical or horizontal to main beam . Picture above is the horizontal type.

## Part 3 Parameters

| QZ Overhead Crane with Grab 5t |     |      |      |      |      |      |      |      |         |
|--------------------------------|-----|------|------|------|------|------|------|------|---------|
| Span                           | S ( | 10.5 | 13.5 | 16.5 | 19.5 | 22.5 | 25.5 | 28.5 | m) 31.5 |

|                |       |      |      |      |      |      |       |       |       |
|----------------|-------|------|------|------|------|------|-------|-------|-------|
| Lifting height | m     | 20   | 20   | 20   | 20   | 20   | 20    | 20    | 20    |
| Lifting speed  | m/min | 39.2 | 39.2 | 39.2 | 39.2 | 39.2 | 39.2  | 39.2  | 39.2  |
| Trolley speed  | m/min | 44.6 | 44.6 | 44.6 | 44.6 | 44.6 | 44.6  | 44.6  | 44.6  |
| Crane speed    | m/min | 93.6 | 93.6 | 93.6 | 93.6 | 93.6 | 113.6 | 113.6 | 113.6 |
| Lifting motor  | kw    | 22   | 22   | 22   | 22   | 22   | 22    | 22    | 22    |
| Trolley motor  | kw    | 3.7  | 3.7  | 3.7  | 3.7  | 3.7  | 3.7   | 3.7   | 3.7   |

|                |    |       |       |       |       |       |       |       |       |
|----------------|----|-------|-------|-------|-------|-------|-------|-------|-------|
| Total weight   | kg | 16600 | 18200 | 20200 | 23200 | 25900 | 30000 | 33400 | 36600 |
| Max Wheel Load | KN | 75    | 80    | 87    | 95    | 102   | 113   | 122   | 130   |
| Track          |    | P43   | P43   | P43   | P43   | P43   | P43   | P43   | P43   |

|                           |    |      |      |      |      |      |      |      |      |
|---------------------------|----|------|------|------|------|------|------|------|------|
| Main dimension            | mm | 10.5 | 13.5 | 16.5 | 19.5 | 22.5 | 25.5 | 28.5 | 31.5 |
| Rail top to main top      | H1 | 1876 | 1876 | 1876 | 1876 | 1876 | 1926 | 1926 | 1926 |
| Rail top to girder bottom | H2 | 128  | 228  | 328  | 478  | 628  | 728  | 878  | 1028 |
| Wheel base                | W  | 4000 | 4000 | 4000 | 4050 | 4050 | 5000 | 5000 | 5000 |
| Crane width               | B  | 6568 | 6568 | 6568 | 6638 | 6638 | 7163 | 7163 | 7163 |
| Hook left limitation      | S1 | 1635 | 1635 | 1635 | 1635 | 1635 | 1635 | 1635 | 1635 |
| Hook right limitation     | S2 | 1635 | 1635 | 1635 | 1635 | 1635 | 1635 | 1635 | 1635 |
| Trolley gauge             | K  | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 |

| QZ Overhead Crane with Grab 10t |     |      |      |      |      |      |      |      |         |
|---------------------------------|-----|------|------|------|------|------|------|------|---------|
| Span                            | S ( | 10.5 | 13.5 | 16.5 | 19.5 | 22.5 | 25.5 | 28.5 | m) 31.5 |

|                |       |       |       |       |      |      |      |      |      |
|----------------|-------|-------|-------|-------|------|------|------|------|------|
| Lifting height | m     | 18    | 18    | 18    | 18   | 18   | 18   | 18   | 18   |
| Lifting speed  | m/min | 39.3  | 39.3  | 39.3  | 39.3 | 39.3 | 39.3 | 39.3 | 39.3 |
| Trolley speed  | m/min | 45.9  | 45.9  | 45.9  | 45.9 | 45.9 | 45.9 | 45.9 | 45.9 |
| Crane speed    | m/min | 112.5 | 112.5 | 112.5 | 101  | 101  | 101  | 101  | 101  |
| Lifting motor  | kw    | 37    | 37    | 37    | 37   | 37   | 37   | 37   | 37   |
| Trolley motor  | kw    | 5.5   | 5.5   | 5.5   | 5.5  | 5.5  | 5.5  | 5.5  | 5.5  |

|                |    |       |       |       |       |       |       |       |       |
|----------------|----|-------|-------|-------|-------|-------|-------|-------|-------|
| Total weight   | kg | 20800 | 22400 | 25200 | 29100 | 32800 | 36200 | 39900 | 42900 |
| Max Wheel Load | KN | 113   | 121   | 131   | 142   | 152   | 162   | 172   | 180   |
| Track          |    | P43   | P43   | P43   | P43   | P43   | P43   | P43   | P43   |

|                           |    |      |      |      |      |      |      |      |      |
|---------------------------|----|------|------|------|------|------|------|------|------|
| Main dimension            | mm | 10.5 | 13.5 | 16.5 | 19.5 | 22.5 | 25.5 | 28.5 | 31.5 |
| Rail top to main top      | H1 | 2078 | 2078 | 2078 | 2189 | 2189 | 2189 | 2189 | 2189 |
| Rail top to girder bottom | H2 | 815  | 815  | 815  | 940  | 940  | 940  | 940  | 940  |
| Wheel base                | W  | 4000 | 4000 | 4000 | 4100 | 4100 | 5000 | 5000 | 5000 |
| Crane width               | B  | 6913 | 6913 | 6913 | 6963 | 6963 | 7413 | 7413 | 7413 |
| Hook left limitation      | S1 | 2015 | 2015 | 2015 | 2015 | 2015 | 2015 | 2015 | 2015 |
| Hook right limitation     | S2 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 |
| Trolley gauge             | K  | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 |

Note: Control mode for cab operation, indoor

## Part 4 Schedule

Pycnometer of Loose Material Piles

| Material name          | Proportion(t/m <sup>3</sup> ) | Material name                  | Proportion(t/m <sup>3</sup> ) | Material name      | Proportion(t/m <sup>3</sup> ) | Material name       | Proportion(t/m <sup>3</sup> ) |
|------------------------|-------------------------------|--------------------------------|-------------------------------|--------------------|-------------------------------|---------------------|-------------------------------|
| Anthracite             | 0.7-1.0                       | Zinc dust                      | 0.7-1.5                       | Pyrite (block)     | 1.5-1.9                       | Large lime          | 1.6-2.0                       |
| Bituminous coal        | 0.8                           | Pyrite cinder                  | 1.7-1.8                       | Manganese          | 1.7-1.9                       | Lime blocks         | 1.2-1.5                       |
| Lignite                | 0.6-0.8                       | Lead and zinc pellets          | 1.3-1.8                       | Magnesia (block)   | 2.2-2.5                       | Small lime          | 1.2-1.5                       |
| Peat                   | 0.29-0.5                      | Pyrite pellets                 | 1.2-1.4                       | Powdered magnesia  | 2.1-2.2                       | Quicklime           | 1.7-1.8                       |
| Peat (wet)             | 0.55-0.65                     | Flat slag (coarse)             | 1.6-1.85                      | Copper             | 1.7-2.1                       | Gravel              | 1.32-2.0                      |
| Coke                   | 0.36-0.63                     | Blast furnace slag             | 0.6-1.0                       | Copper concentrate | 1.3-1.8                       | Dolomite (block)    | 1.2-2.0                       |
| Charcoal               | 0.2-0.4                       | Lead and zinc water slag (wet) | 1.5-1.6                       | Lead concentrates  | 1.9-2.4                       | Crushed dolomite    | 1.8-1.9                       |
| Anthracite powder      | 0.84-0.89                     | Dry ash                        | 0.64-0.72                     | Zinc concentrate   | 1.3-1.7                       | Gravelly soil       | 1.5-1.9                       |
| Bituminous coal powder | 0.4-0.7                       | Coal ash                       | 0.70                          | Lead and zinc      | 1.3-2.4                       | Clay (small pieces) | 0.7-1.5                       |
| Powdered graphite      | 0.45                          | Coarse sand (dry)              | 1.4-1.9                       | Iron sinter        | 1.7-2.0                       | Clay (wet)          | 1.7                           |
| Magnetite              | 2.5-3.5                       | Coarse sand (wet)              | 1.4-1.65                      | Broken sinter      | 1.4-1.6                       | Cement              | 0.9-1.7                       |



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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.