



Technical Agreement
For 1.5t36.6m &30t12m Crane

Equipment: AOC-1.5t36.6m &30t12m Hydraulic Telescopic Boom Crane

Class: ABS

Maker: Anchor Marine Tech

Quantity: One (1) set

Buyer name:

Buyer's signature:

Sellers name:

Seller's signature:

Date:2019-12-27

1. GENERAL

A. This agreement writes in English language,

B. The crane is designed as an electro-hydraulic driven telescopic boom crane, with integrated electro-hydraulic power unit, delivered as a complete unit ready for installation to vessels. The crane is equipped with hydraulic operated winch, hydraulic operated luffing and telescopic booms and hydraulic operated slewing system.

The crane equipped with an operator cabin; a SWL of 8T Main Hoisting winch(4 falls), a SWL 1.5 T Auxiliary hoisting winch (1 fall).

C. 5 days prior to Factory Acceptance Test (FAT) for the equipment, seller should inform buyer to attend the test and at the same time submit the inspection / test information to them.

D. The manufacturer shall guarantee that the equipment it supplies the buyer shall conform to the drawing (modified according to comments) and in case any modification is necessary during the process the manufacturer shall immediately contact and obtain consent from the buyer and send the information of the modifications and the explanation to the buyer

2. FUNCTION DESCRIPTION

A. CRANE CONTROL

The crane is controlled from an **Operator cabin which should be air conditioned**. One motions each (hoisting, slewing or luffing) can be done with full load. Three movements may be operated at the same time with full capacity, but with reduced speed

B. LOAD LIMITING SYSTEM

There will be a load indicator system to limit load capacity. Each hydraulic circuit also is provided with equipment for limiting hydraulic pressure to preset values corresponding with crane capacity.

C. LIMIT SWITCH

Over upper winding limit of cargo hook. The crane is provided with an automatic hook stop in top and bottom position.

- 1) Over load safety device.
- 2) Luffing up- down

The luffing cylinder is designed for safe buffering in extreme positions.

D. ELECTRICAL HYDRAULIC POWER PACK

The crane is provided with a power pack. Motor should be installed inside the pedestal for a compact design.

- Crane house is used as oil tank.
- Hydraulic circuit has a full flow return filter with changeable filter inserts.
- The oil tanker is including indicator and thermometer.

E. PUMP MOTOR

Pump motor is rat-type, wind cooler, which is suitable to use in marine applications, IP56, **Power source is 415V, 50Hz, working duty: S1.**

F. STARTER BOX

220V50Hz, 1P:

A starter for location in the basement, the starter box will be included as standard, hour meter, ampere, power indicator, start/stop button and start/stop button on the front door.

G. SLEWING MECHANISM

The crane is provided with a slewing ring designed for marine applications, the gearing is internal.

The slewing gear is of the planetary type with multi disk brake, adjustment of backlash between pinion.

H. HOISTING MECHANISM

Winch includes:

- Drum with bearing and brake.
- Winch gear with hydraulic operated fail safe brake
- Hydraulic motor with safe valve
- The drum is designed for a capacity to take the wire rope on max 3 layers
- Steel wire rope is non-rotating type and is galvanized.
- Min. safety factor is 5.
- The wire sheaves are provided with heavy-duty roller bearing on axles.
- All bearing have grease nipple lubrication.
- Zebra mark (black & yellow) & SWL mark to be provided on hook block assembly.

I. JIB CYLINDER

The cylinder is designed for marine use and has self-lubricating bearings on axles.

J. SAFTY FEATURE

The hoisting machinery is designed with emergency load releasing handle, just in case of power failure.

The jib cylinders holding valve is designed for in case of power Failure.

K. HYDRAULIC PIPE AND TUBE

Hydraulic pipes should have pressure test before setting up. Pipes wash clean before setting up.

L. STEEL STRUCTURE

The steel plate for building the crane will be HG70. The steel quality is selected in accordance with the classification society recommendation to obtain necessary ductility for the lower temperature design limits.

All important welds are carried out in accordance with welding procedures, after welding, a certain of checkout will be carried out.

3. MAIN REQUIRES

1	CRANE TYPE	Hydraulic Telescopic Boom Crane
2	CERTIFICATION	ABS
3	QUANTITY	1set
4	HEEL/TRIM	$\leq 5^\circ/2^\circ$
5	AMBIENT TEMPERATURE	0°C~+50°C
6	Significant Wave Height	Hsig = 0.5m (Sea state 2 condition as confirmed)
7	SWL	30T @12m(Main hook) 1.5T@36.6m(Aux hook) At sea state 2, Hsig = 0.5m
8	WORKING DADIUS	Main hook:4~12m Aux hook:5.5~36.6m
9	HOISTING SPEED	Main hook:~10m/min Aux hook:~30m/min
10	LIFTING HEIGHT	Main hook:30m Aux hook:40m

11	SLEWING ANGLE	~360° all free
12	SLEWING SPEED	0~0.5r/min
13	LUFFER TIME	120s
14	SELF WEIGHT OF CRANE	~45t (Confirmed in approval drawing)
15	POWER SUPPLY	<u>415V, 50Hz</u>
16	POWER OF MOTOR	132kW

4. Configuration Details

No.	Item	Brand	From
1	Pump	LEDEC /DANFOSS	Imported (Global services)
2	Electric magnetic proportional control valve	DANFOSS/HC	Imported (Global services)
3	Cylinder	Yancheng Haite	Domestic
4	Hook	Changshu Xinghua	Domestic
5	High pressure hoses	China	Domestic
6	Main electric components	French Schneider	Imported (Global services)
7	Rotary device	Ningbo Nicholini hydraulic Co., Ltd. Shanghai Hanzhuo Ningbo Xinhong	Valve USA SUN
8	Hoisting winch	Ningbo Nicholini hydraulic Co., Ltd. Shanghai Hanzhuo Ningbo Xinhong	Valve USA SUN
9	Slewing bearings	WUxi Li Da Slewing Bearing Co., Ltd.	Domestic
10	Motor	Wuxi Lanhai	Domestic
11	Wire rope	Nantong Langshan Steel wire rope	Domestic
12	Cabin	Zhejiang Sangang	Domestic
13	Wind cooler	Shanghai Yuanyue	Domestic

5. PAINT

Painting Condition: Cranes should use reliable brand good quality painting to adjust the working environment: salty water, high humidity. And the 3 layers painting thickness are 40um for epoxy zinc primer paint, 100um for secondary paint and 60um for finish paint. Total DFT will be 200 um. Painting color will be decided by client according to RAL Chart.

6. DRAWINGS & DOCUMENTS

General production drawing: 1 set of PDF document

After the contract is executed, SELLER should submit the General production drawing to BUYER for confirming construction within 2 weeks.

After receiving the General production drawing, BUYER should reply comments or suggestion. If BUYER has not returned with any comments within 3 days, that means BUYER agrees on the General production drawing.

Counter of drawings and documents:

No.	Name of drawing	Appr. DWG.	Cont. DWGC	Final DWG.	
1	G.A.	YES	YES	YES	
2	Spare parts list	YES	YES	YES	
3	Test report			YES	
4	Instruction	YES	YES	YES	
5	Factory certification			YES	
6	ABS Class witness			YES	
7	Packing list			YES	

7. DELIVERY AND ACCEPTANCE CHECK

Seller should strictly manufacture, install and check according to approved drawings before the crane leaves the factory, Seller should inform Buyer of acceptance check ahead of one week.

8. QUALITY GUARANTY

The crane's warranty period is 12 months from the date of erecting up on ship deck.

Remark: For defects of the crane during the warranty period, the principle is, firstly, manufacturer will offer technical support by emails and telephones ASAP and send necessary parts for repairing; And if the crane is in China, manufacturer will send engineers for on-site maintenance freely.

The quick wear parts and faults caused by abnormal operation of the crane if not under warranty.

All other details are settled by further negotiations.