



AAI الحمد للسيارات  
Al Hamad Automobiles



**XCMG For Your Success**

<b>Max. rated lifting capacity</b>	55t
<b>Boom length</b>	13~52m
<b>Boom luffing angle</b>	-3~80°
<b>Fixed jib length</b>	7~16m

**QUY55**

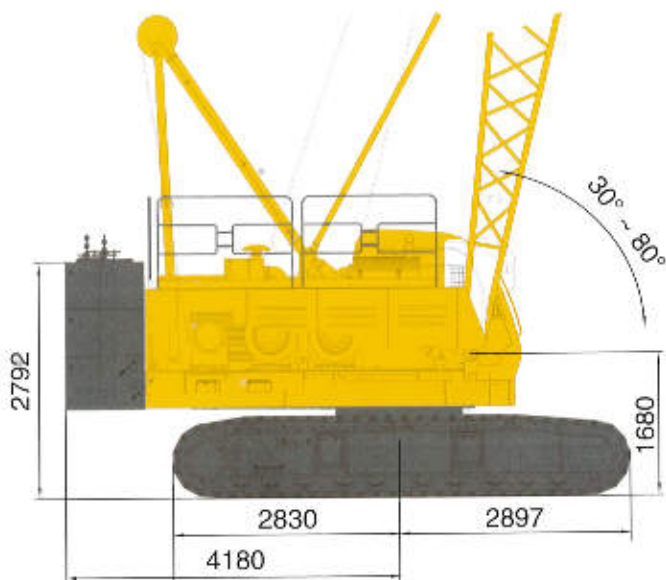
**CRAWLER CRANE**



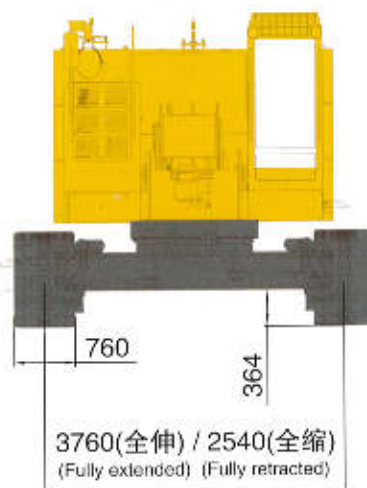
# 主要技术参数

## The Main Technical Parameters

项目(Item)	单位(Unit)	数值(Value)	
最大额定起重量 Max. rated lifting capacity	主臂工况 Boom working condition	t	55
	臂端单滑轮工况 Boom single pulley working condition	t	6
	固定副臂工况 (不带主钩) Fixed jib working condition (without main hook block)	t	11.4
	固定副臂工况 (带主钩) Fixed jib working condition (with main hook block)	t	10.4
最大起重力矩 Max. load moment	t · m	203.5	
主臂长度 Boom length	m	13 ~ 52	
主臂变幅角度 Boom luffing angle	°	-3 ~ 80	
固定副臂长度 Fixed jib length	m	7 ~ 16	
主臂与固定副臂夹角角度 Angle between boom and fixed jib	°	10, 30	
起升机构最大单绳速度 Hoist winch max. single line speed	m/min	125	
主臂变幅机构最大单绳速度 Boom luffing winch max. single line speed	m/min	87	
最大回转速度 Max. slewing speed	rpm	2.45	
最高行驶速度 Max. travelling speed	km/h	1.37	
整机质量(基于13m基本臂, 55t起重钩) Total vehicle mass (55t hook block, 13m boom)	t	46.3	
平均接地比压 Mean ground pressure	MPa	0.06	
爬坡度 Grade-ability	-	30%	
运输状态单件最大质量 Max. mass of single unit in transport state	t	28.6	
运输状态单件(转台)最大尺寸 (长 × 宽 × 高) Max. dimension of single unit in transport state (L × W × H)	m	12.04 × 3.45 × 3.36	



A向 (拆去主起重臂、人字架、变幅滑轮组等)  
A direction (main lifting boom, A-frame and luffing pulley block are removed away)







## 详细介绍

# Description On Components And System



### 上车部分

#### 发动机系统

型号: 上柴SC7H175.1G2  
 额定功率/转速: 128kW/2000rpm  
 最大扭矩/最大扭矩转速: 680N·m/1300-1500rpm  
 环保性: 符合国 II 标准。

#### 液压系统

用液压先导比例控制的负载敏感LUDV系统, 可实现与负载无关的流量分配, 速度精准, 操作灵敏, 系统稳定、微动性好。专用LUDV集成式主阀, 可实现任意动作的复合操作, 结构紧凑, 检修方便。创新采用微控调节技术, 大大提高整车动作的平稳性与精确度。

主起升、副起升具有双泵合流功能, 轻松实现卷扬高低速控制。专用回转缓冲油路设计, 回转启停平稳、柔和, 满足精细吊装作业要求。

液压油箱容积: 400L。

#### 电气系统

电气系统主要包括如下部分: 发动机控制、监测仪表、辅助设备、液压系统控制、力矩限制及安全监控等。

电气系统的构成: 常规电气系统和PLC监控系统。

常规电气系统采用24V并联回路, 用电设备接线采用负极搭铁的单线制。包括电源、启动控制、驾驶室冷暖空调及音响、照明(灯光)、雨刮器等。

PLC监控系统包括主副卷扬、回转、主臂变幅等动作的控制、发动机状态监测。所有动作全部采用液比例控制技术, 通过CAN-bus总线技术的PLC逻辑控制, 能有效保证主机各功能的实现, 并充分体现以人为本的设计思想。



### Crane Superstructure

#### Engine system

Standard engine:  
 Model: Shanghai diesel SC7H175.1G2.  
 Rated power: 128kW/2000rpm  
 Max. torque/Max. torque speed: 680N·m/1300-1500rpm  
 Environmental protection: China GB II standard.

#### Hydraulic system

Hydraulic system adopts hydraulic proportional pilot control load sense LUDV system, to achieve load-independent flow distribution, with accurate velocity, sensitive operation, stable system and good line movement. Special LUDV centralized main valve to realize combined operation, with compact structure and easy for maintenance.

Main winch and auxiliary winch has double-pump combined flow function, to easily realize winch high/low speed control. Special slewing buffering circuit design, to realize stable slewing start and stop to meet the requirement of delicate lifting operation.

Hydraulic oil tank capacity: 400L.

#### Electrical system

Electrical system mainly includes: engine control, monitoring instruments, auxiliary equipment, hydraulic system control, load moment limit and safety monitoring.

Electrical system composition: conventional electrical system and PLC monitoring system.

Conventional electrical system uses 24V parallel circuit, the electrical equipment wiring is negative ground single system, including power, starter control, cab heating/cooling air conditioner, sound device, lighting (lamps) and wipers.

PLC monitoring system includes the operation control of main/auxiliary winches, slewing unit, boom and tower jib luffing and engine status monitoring. All the crane movements use hydraulic proportional control technology, through PLC logic control based on CAN-bus technology, effectively ensure the realization of the machine functions, and fully reflect the concept of people-oriented design.



## 详细介绍

# Description On Components And System

### 起升机构

主起升、副起升机构内置行星减速机，采用负制动设计多片湿式叠片式常闭制动器，实现“弹簧制动/液压释放”功能，安全可靠。采用溅油方式润滑，减少维护保养强度。起升机构还具有换油方便、低噪音、高效率、长寿命等特性。同时具有优良的微速性能。

起升卷筒采用吸振性良好的球墨铸铁制造，双折线绳槽保证钢丝绳多层卷绕不乱绳，有效地延长了钢丝绳的使用寿命。主起升机构使用独立钢芯、高破断拉力、高抗挤压性的左旋同向捻抗旋转特种钢丝绳。

主起升机构 Main hoist gear	额定单绳拉力 Rated single line pull	6t
	钢丝绳直径 $\phi$ Wire rope diameter	20mm
	长度 Length	200m
副起升机构 Auxiliary hoist gear	额定单绳拉力 Rated single line pull	6t
	钢丝绳直径 $\phi$ Wire rope diameter	20mm
	长度 Length	130m

### 变幅机构

变幅机构内置行星减速机，采用湿式叠片式常闭制动器，实现“弹簧制动/液压释放”功能。

主变幅卷筒采用球墨铸铁制造的双折线多层卷绕单联卷筒，具有良好的吸振性，可保证钢丝绳多层卷绕不乱绳，有效地延长了钢丝绳的使用寿命。卷筒设有棘轮锁止装置，由液压油缸驱动棘爪，实现多重锁定保护。

变幅机构采用独立钢芯、高破断拉力、结构稳定性极佳的左旋交互捻非抗旋转特种钢丝绳。

变幅机构 Luffing gear	额定单绳拉力 Rated single line pull	6t
	钢丝绳直径 $\phi$ Wire rope diameter	20mm
	长度 Length	103m

### 回转机构

回转机构与回转支承采用内啮合方式驱动，布置在转台前部，由定量马达驱动行星齿轮减速机通过小齿轮驱动回转支承，实现360°回转。

回转机构内置行星减速机，采用负制动设计的多片湿式叠片式常闭制动器，以实现“弹簧制动/液压释放”功能，确保回转具有极高的制动安全性。回转机构还设有机械式回转锁定装置，以实现回转机构的锁定保护。

偏心机构可保证减速机和回转支承更好啮合，使回转更平稳。回转机构具有自由滑转功能，保证重物起吊时，当起重钩即使不在被吊重物的重心垂直中心线上，也可以消除对臂架的侧向力，进而防止作业臂因受到较大侧向力而损坏。

### Hoist gear

Main/auxiliary hoist gear has built-in planetary reducer, with negative brake design of multi-plate wet-type laminated constant closed brake, to achieve "spring brake/hydraulic release" function, safe and reliable; maintenance free oil splash lubrication; convenient oil replacement, low noise, high efficiency, long service life and good fine movement function.

Hoist gear drum is made of nodular cast iron with good vibration absorption, double line rope groove to ensure multilayer rope winding, effectively increasing the wire rope service life.

Main hoist gear adopts separate steel core, high breaking force and high anti-extrusion of L-turn special anti-rotation wire rope, rated single line pull 6t, rope diameter  $\phi$  20mm, rope length 200m.

Auxiliary hoist gear adopts separate steel core, high breaking force and high anti-extrusion of L-turn special anti-rotation wire rope, rated single line pull 6t, rope diameter  $\phi$  20mm, rope length 145m.

### Luffing winch

Luffing gear has built-in planetary reducer, with wet-type laminated constant closed brake, to achieve "spring brake/hydraulic release" function.

Main luffing drum is made of nodular cast iron with good vibration absorption, double line rope groove to ensure multilayer rope winding, effectively increasing the wire rope service life. Use hydraulic cylinder to drive the ratchet paws of the ratchet locking device on drum to achieve multiple locking protection.

Luffing gear adopts separate steel core, high breaking force and high anti-extrusion of L-turn special anti-rotation wire rope, rated single line pull 6t, rope diameter  $\phi$  20mm, rope length 103m.

### Slewing unit

Slewing unit and slewing ring is driven by internal meshing, arranged in front of turntable, through a planetary reducer driving a constant motor via pinion to drive slewing ring, so as to achieve 360° rotation.

Slewing unit has a built-in planetary reducer, with negative brake design of multi-plate wet-type laminated constant closed brake, to achieve "spring braking/hydraulic release" function, to ensure a high safety brake. Slewing unit also has a mechanical locking device for locking protection of the slewing unit.

The eccentric gear makes better meshing of reducer and slewing bearing and stable slewing. Slewing unit also has a free-swing function to ensure a lifting load aligned to the center line of gravity center even when the lifting hook is not in the center of the vertical center line, and also to eliminate the side load force on the boom, so as to prevent the boom from damage due to a large side loading force.





## 详细介绍

# Description On Components And System

### 转台

转台是联系上下车的关键承载结构件，主受力结构采用高强度钢板焊接而成的平板式箱型结构，两侧通过焊接悬臂结构增加整机空间，用于布置固定载荷。转台通过回转支承与下车进行联接。主臂底节、人字架、起升机构、变幅机构和平衡重布置在主受力结构上；操纵室、发动机系统、主泵、液压阀、电控柜等结构布置在两侧悬臂结构上，转台主体结构和两侧悬臂结构根据整机的受力状况设计，结构合理，整体强度和刚度好。

### 人字架

人字架由双肢结构组成，两肢之间有加强横梁，稳定性好。人字架主要结构为优质无缝钢管，有效减少焊接量，制造缺陷少，安全系数高。人字架有高低两种状态，作业时竖起，运输时放倒。人字架上配备自扳起托辊，可在主臂底节臂的配合下实现自扳起功能。

### 操纵室

操纵室造型采用仿生设计的手法，线条流畅又不失力量感。操纵室玻璃面积大，侧面的玻璃划分合理，科技感强，操纵视野宽阔。内饰以人为中心进行布置，操作者不用起身即可触碰到所有按键。配置可调式座椅、冷暖空调、电源插座、收音机等，为操作者提供了舒适的操作环境。

## 下车部分

下车包括车架、履带行走装置等。

### 车架

车架为放射型箱型结构，采用高强度钢板焊接而成，整体刚性好、强度大、精度高。上平面经精密机加，确保与回转支承可靠连接。

### 平衡重

平衡重共16t，安装在转台后方，与转台采用销轴柱靠式连接。平衡重组成如下：

平衡重托盘1×2.4t，左右平衡重块6×2t，中央平衡重块2×0.8t。

### Turntable

Turntable is a key load bearing structural component to connect crane superstructure and crane undercarriage, main load bearing structure is platform box-type welded by high-strength steel plate, on both sides use welding cantilever structure to increase basic machine space to place and fix load. The turntable is connected with undercarriage by slewing ring. Boom base, mast, hoist gear, luffing gear and counterweight is placed on the main load bearing structure; cab, engine system, main pump, hydraulic valve and electrical control cabinet is placed on the cantilever structures on both sides. The turntable main structure and the cantilever structures on both sides are designed according to the load bearing condition of the basic machine, reasonable structure and good overall strength and rigidity.

### Mast

Mast is a double limb structure, with strengthened beam between two limbs for good stability. The main structure of mast is fine seamless steel pipe, with less welding, manufacturing error, and higher safety factor. Combined with self-raising roller, cooperating with boom, can achieve self-assembly/disassembly.

### Operator's cab

Cab is ergonomically designed, fully enclosed, wide field of vision, with smooth line and strength; wider operation vision from large front and side glass, more sense of technology. User-friendly interior layout, all buttons are easy to reach while the operator is seating on seat. Provide comfortable operation environment with adjustable seat, air conditioner, power socket and radio, etc.

## Crane Undercarriage

Undercarriage consists of car-body and crawler travel gear, with insert-type connection.

### Car-body

Car-body is made of high strength steel and welded in box-type radial structure good overall rigidity, high strength, and high precision. Precision machining ensures correct slewing ring installation.

### Counterweight

Car-body counterweight is total 16t, installed in the rear of turntable, and use pin shaft to connect with turntable the composition is the follows:

Counterweight tray 1×2t, left/right counterweight slab 6×2t, central counterweight slab 2×0.8t.



## 详细介绍

# Description On Components And System

### 履带行走装置

履带行走装置分为左、右履带行走装置，由履带架、履带板、支重轮、驱动轮、导向轮、托链轮及行走机构、张紧装置组成。

履带架：左右对称，各1件。采用高强度钢板焊接成的箱型结构，与车架采用插入式连接方式，抽屉式上下间隙调整装置，确保履带架安装后不会产生横向的八字现象，避免履带板与支重轮产生偏磨。

履带板：高强度耐磨合金钢铸件，宽度760mm，共2×64=128件。

行走机构：常闭式行星齿轮减速机，采用斜轴柱塞马达驱动。行走动力强劲，可实现直线行走、原地转向、单边转向、差速转向及带载行走等动作，有极高的灵活性和机动性。多片湿式常闭制动器，弹簧制动，液压松闸，确保行走具有极高的制动安全性。

最高行走速度：1.37km/h。



### 安全装置

本起重机广泛采用机械、电子和液压等多种安全及报警装置，以确保机器的安全使用。安全装置包括力矩限制器、回转锁定装置、起重臂防后翻装置、起升高度限位装置、起重臂角度限位装置、风速仪、回转警告及液压系统溢流阀、平衡阀等。

### 力矩限制器系统

检测功能：力矩限制器能自动检测出起重臂的角度、起重载荷。

显示功能：彩色大屏7.0寸液晶显示器。用中文(或英文)和图形方式显示力矩百分比、实际起重重量、额定起重重量、工作半径、吊臂长度、角度、最大起升高度、工况代码、倍率、限制角度、信息代码等起重作业参数。

警示功能：具有完整的预先报警、超载停止作业功能。如果检测到实际载荷超过额定载荷，起重臂超过极限角度，力矩限制器发出报警并限制当前动作。

系统具有故障自诊断功能。

### 安装模式&工作模式切换开关

安装模式下，防过卷装置、起重臂限位装置、力矩限制器等均不起作用，以利于起重机安装；工作模式下，所有安全装置均起作用。

### Crawler travel unit

Crawler travel unit is divided into left/right crawler, consisting track frame, crawler shoe, track roller, drive sprocket, guide roller, idle roller, travel device and tension device.

Track frame: symmetrically arranged, one on each side, made of high-strength steel plate welded in box-type structure, insert type connection with car-body, drawer type clearance adjusting device to make sure there is not lateral "八" type deformation and prevent collision between crawler shoes and lower roller.

Track shoe: high strength wear resistant alloy steel casting, width 760mm, total 2×64=128 pieces.

Travel gear: constant close type planetary reducer, axial piston motor drive, strong travel power for movement such as straight travel, turn on site, one side turn, differential turn and travel with load with excellent agility and flexibility. Multiple-disc wet type constant close brake, spring brake, hydraulic loose brake guarantees excellent brake safety.

Max. travelling speed: 1.37km/h.



### Safety Protection Devices

This crane widely uses mechanical, electronic, hydraulic and other safety and alarm devices, in order to ensure safety operation. The safety devices consists LMI, slewing locking, boom backstop, hoist limit, boom angle limit, anemometer, slewing alarm, hydraulic system overflow valve, balance valve, hydraulic lock, and etc.

### HirschmannLoad moment limiter

The custom-madeHirschmannfeatures little power consumption, strong function, high sensitivity and easy operation.

Detection function: automatically detect boom angle and lifting load.

Display function: large color touch screen LCD display (7.0 inches), with Chinese (or English) and graphically display ofmoment percentage, actual lifting load, rated lifting load, working radius, boom length, boom angle, max. lifting height, working condition code, parts of line, limit angle and information code.

Alarm function: complete pre-warning and overload stop functions. The LMI will automatically send out alarm and stop crane operation when actual lifting load exceeds total rated lifting load and boom is out of limit angle.

The system also has self-diagnosis function.

### Assembly/Work mode switch

In assembly mode, anti-over-wound device, boom limit device and LMI does not work, in order to facilitate crane assembly; in work mode, all safety devices are working.





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# Description On Components And System

### 紧急停止按钮

紧急情况下，按下此按钮将停止所有动作。

### Emergency stop switch

In emergency cases, press this button to stop all crane movement.

### 防过卷装置

臂头设置主起升和副起升钢丝绳防过卷装置，防止钢丝绳过卷。当主起升、副起升钢丝绳起升到一定高度的时候，显示器上的过卷指示灯亮，同时力矩限制器停止起升动作。

### Over-wound protection device

A main/auxiliary hoist over-wound protection device is installed on boom head to prevent wire rope from over-wound, when main/auxiliary winch hoists up to a certain height, the over-wound lamp on display lights on, at the same time, LMI stops hoisting up movement.

### 防过放保护

主起升、副起升机构均设置三圈保护器，避免卷筒放绳时产生过放。当主起升、副起升钢丝绳只剩三圈时，显示器上的过放指示灯亮，同时力矩限制器停止下落动作。

### Winch over-release protection device

A rope-end limiter is installed in main and auxiliary hoist winch to protect wire rope from over-release from the winch drum. When there is only 3 layers of rope left on main/auxiliary winch, the over-release lamp on display lights on, at the same time, LMI stops lowering down movement.

### 棘爪锁止装置

该功能用于锁定主变幅卷扬，用于保护臂架在非工作时安全停放。

### Winch ratchet locking device

This function is used to lock the main luffing winch to protect the boom for stop work during non-working time.

### 机械式安全装置

回转锁止装置用于起重机停止时上车的机械限位；主臂、副臂支架防后翻装置，防止臂架及支架的后仰。

### Mechanical safety device

Slewing locking device is used for crane superstructure mechanical limit when the crane stops; the backstop device for boom and jib to prevent boom, jib and strut from backward tipping.

### 起重臂角度限制

主臂架起到规定角度时，起升被停止，由力矩限制器和行程开关双级控制；主臂架在仰角小于规定角度时，下落被停止，由力矩限制器控制并发出声音报警。

### Boom angle limit

When boom is raised to the specified angle, the hoist operation is stopped, and controlled by LMI and stroke switch; when boom angle is lower than the required angle, the lowering down operation is topped, and controlled by LMI and send out an audio alarm.

### 起重钩防脱卡

所有起重钩均装有防脱卡板，防止悬挂在起重钩钩头的吊索脱落。

### Hook block retainer clamp

All hook blocks are equipped with retainer clamps to prevent the sling falling off from hook head.

### 液压系统

配置液压平衡阀、液压溢流阀等装置，保证系统工作时稳定安全。

### Hydraulic system

Hydraulic system is equipped with hydraulic balance valve, and hydraulic overflow valve etc. to ensure system stability and safety.



## 详细介绍

# Description On Components And System

### 三色力矩报警灯

三色力矩报警灯由三种颜色组成，力矩百分比在90%以下时“绿灯”亮，表示起重机在安全区域运行；力矩百分比在90%~100%时“黄灯”亮，表示起重机在已接近额定载荷范围。力矩百分比高于100%时，“红灯”亮，表示起重机已经超载，在危险区域，控制系统自动切断起重机向危险方向运行的动作。

### 声光报警器

在起重机做行走或回转动作时，声光报警器灯可闪烁和发出声音进行报警。

### 照明灯

照明灯装在转台前方、操纵室上方和操纵室内，用于夜间工作时提供照明。

### 后视镜

位于操纵室外侧，便于司机观察起重机后方情况。

### 示高灯

示高灯安装在臂架顶部，作为高空警示。

### 风速仪

实时检测当前风速，并传送到操纵室的监视器上，提醒操作者注意实时风速，以确保起重机在安全风速内工作。

### Tricolor warning lamp

The lamp comprises 3 colors, when crane loading is below 90% of total rated lifting load, "Green Lamp" lights on to indicate crane is working in safety area; when crane loading is in 90%~100% of total rated lifting load, "Yellow Lamp" lights on to indicate crane is close to total rated lifting load; when crane loading is above 100%~102% of total rated lifting load, "Red Lamp" lights on to indicate crane is overload; In dangerous area, control system can automatically cut off crane movement to the dangerous direction.

### Audio/video alarm

When the crane is moving and slewing, there is light and sound for alarm.

### Illumination lamp

There are illumination lamps in front of turntable, abovecab and inside cab for night operation.

### Rearview mirror

Rearview mirror is located outside the cab for operator to observe condition of the back of the machine.

### Height mark lamp

Height mark lamp is installed on boom tip for alarm.

### Anemometer

Anemometer at boom tip can detect current wind speed and send wind signal to the monitor in cab to alert operator for wind load safety.





# 主臂工作范围 Boom working Area

