



Technical Specification of XR280D

Rotary Drilling Rig

XUZHOU CONSTRUCTION MACHINERY GROUP CO., LTD.

June 2016

Introduction of Advantages (Highlights) of XR280D Rotary Drilling Rig

Technical features

1. It adopts dedicated hydraulic retractable crawler chassis and large diameter slewing bearing and has high stability;
2. The design of the machine complies with CE standard to ensure it'safety and Euro III emission standard.
3. Imported Cummins electric control turbo-supercharged engine with advantaged electronic and hydraulic control technique is used. it has strong power.
4. It adopts the back-located single-rope main winch structure to greatly prolong the service life of steel wire rope and lower the use cost.
5. Several forms of Drilling rods are available for construction of big holes and deep piles in hard formation.
6. Several extended functions are available for selection, such as foot bracing oil cylinder, sleeve-driven.
7. It is equipped with a centralized lubrication system as standard configuration; maintenance is easy.

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Technical Specifications

Product model: XR280D rotary drilling rig

Manufacturer: Xuzhou XCMG Foundation

XR280D rotary drilling rig is widely applied in pore-forming work of the cast-in-place concrete pile in construction of foundation works, such as highways, railways, bridges, ports and high-rise buildings.

I. Technology Introduction

1、Chassis

XR280D is equipped with the dedicated chassis of rotary drilling rig of ultra-strong stability, which facilitates the transportation and provides excellent traveling performance.

Crawler width (retraction/extension)	3500/4800mm
Width of crawler plate	800 mm
Wheel track	5175mm
Crawler length	6150mm
Number of thrust wheels	2×12 ↑
Driving force	520kN·m
Climbable gradient	35%
Traveling speed	1.5km/h
Ground pressure	102kPa
Working Weight	88000Kg

Engine system

Imported Cummins electric control turbo-supercharged engine is used and has strong power.

Engine model	QSM11-C400
Rated power	298kW (400HP)
Rated speed	2100 r/min
Executed emission standard	EU Stage IIIA
Fuel tank volume	650L

Hydraulic system

The hydraulic system employs the load sensing technology for higher efficiency and better energy saving.

Hydraulic main pump	Rexroth
System pressure	35 MPa
Flow (main circuit + auxiliary circuit)	2×285 l/min+1×144 l/min

Hydraulic tank volume	865 L
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Cab

The noise-proof cab with FOPS function (protective steel structure) is equipped with adjustable chair, air conditioner, internal and external lights and windshield wiper. It is easy for operation with help of the console of various instruments and operation handles. It is also provided with a color LCD display with powerful function.

Winch

The main winch mechanism adopts the single-rope main winch to effectively solve the wearing problem and improve the service life of the steel wire rope.

Main winch

Max. working pulling force	260kN
Diameter of steel wire rope	φ32
Model of steel wire rope	32 NAT 35(W) × K7+1960 ZS
Permissible diameter error of steel wire rope	+2%~+4%
Length of steel wire rope	122m

Auxiliary winch

Max. working pulling force	80kN
Diameter of steel wire rope	φ20mm
Model of steel wire rope	20NAT6×19W+IWS1770ZS
Permissible diameter error of steel wire rope	+2%~+4%
Length of steel wire rope	70m

Drilling mast

Luffing mechanism of large parallelogram is used, realizing large-scale working region. The drilling mast is designed in box structure of high strength and rigidity to effectively ensure the drilling accuracy.

Ground clearance 23146mm

Left/right inclination of mast 4°/ 4°

Front/back inclination of mast 5°/15°

Rotary drive

Rotary drive is controlled by a mechanism of pressurization cylinder or pulling cylinder. It is equipped with a drilling hydraulic motor with spring damper on the top. It's also provided with a driving sleeve suitable for the friction and internal lock type drill rod and with a guide frame with bearing.

Drilling speed 6~22r/min

Max. drilling torque 280kN.m

Rotary drive standard configuration or optional configuration list (standard configuration ●, optional configuration ○, no configuration -):			
Drive ringer	○	Sleeve drive	○
动力头入岩模式	○	高速甩土功能	○

2、Drill rod

The drilling rod provided with the XR280D rotary drilling rig can be selected.

Diameter of drill rod $\phi 508$ mm

Max. drilling diameter $\phi 2500$ mm

Rectangular head dimension 200×200 mm

Maxi. drilling depth Standard configuration: 73m (5-section friction-type drill rod MZ508-5×16.1 with the mass of 12000kg)

Or 58m (4-section machine-locking type drill rod JS508-4×16.0 with the mass of 11600kg)

3、Drilling Tools

可选用地质矿产廊坊聚力岩土工程科技开发公司、天津市八方伟业科技有限公司、北京创深工贸有限公司、徐州承达机械设备有限公司生产的长、短螺旋钻具、普通钻斗、捞沙钻斗、筒式岩石钻头等钻具。

4、Electrical System

It adopts the advanced intelligent control technology, CANBUS technology

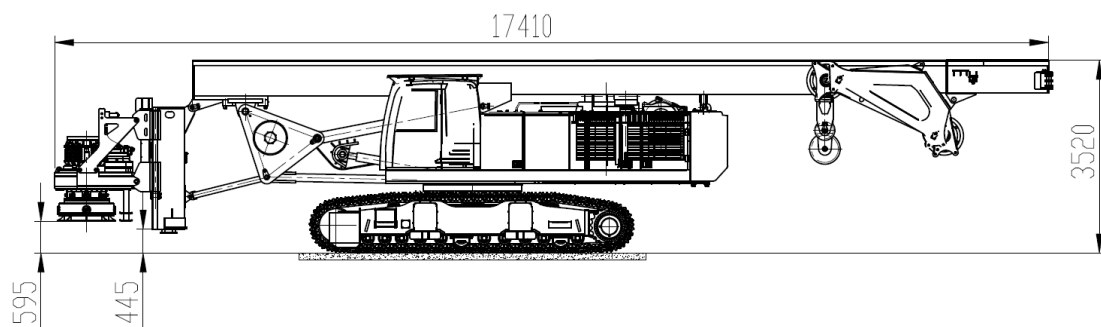
and virtual instrument technology. Human-machine interface is simple for operation and easy for observation. It provides the direct display of mast verticality and hole site depth, automatically performs real-time detection and record display and automatically record the operation fault. It also displays the online commissioning and diagnosis of the input/output signal and various alarm information as limit of drilling mast, luffing limit, main winch limit, alarm of filter and maintenance notification. The PLC control system can automatically/manually adjust the verticality of the drilling mast which is shown in real time and dynamically on the display in the form of “cross” and numerical value.

Electric system standard configuration or optional configuration list (standard configuration●, optional configuration○) :			
The verticality of drilling bar detection	●	Derricking limit protection	●
Drilling depth detection	●	Mast limit (front and back、left and right)	●
Oil pressure detection	●	Filter clogging alarm	●
GPS location	●	Main winch bottom protection	●
PLC intelligent control modules	●	Radio	●
Intelligent detection	●	Angle of revolution show	●
Manually/automatically adjusting of mast's verticality	●	Main winch infrared monitor	●
Main winch of floating	●	Auxiliary winch height limit	○
Fuel oil pump	●	Rotary drive torque show	○
Rotation alarm	●	Main winch pulling force detection	○
Main winch height limit	●	The safety monitoring of the tail	●
Air-conditioner	●		

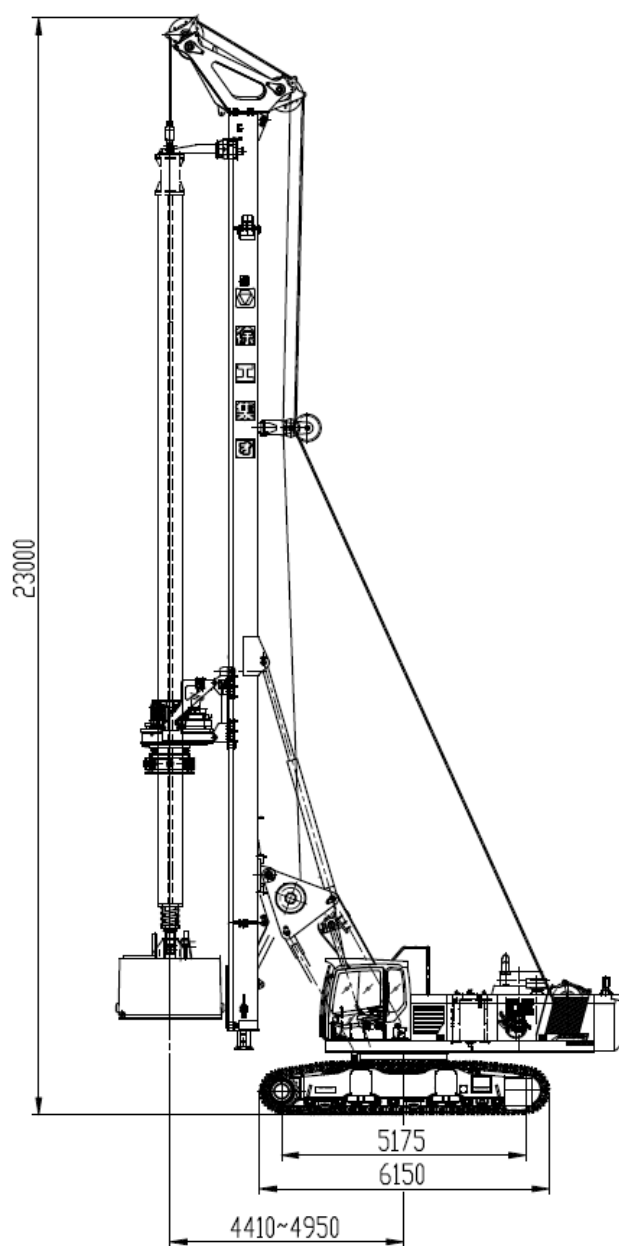
II. Main Technical Parameters

S/N	Description		Unit	Parameter value
1	Max. drilling diameter		mm	Ø2,500
2	Max. drilling depth (height of drill bit barrel: 0.8m)		m	88
3	Allowable luffing scope (from center of drill rod to slewing center)		mm	4410~4950
4	Drilling rig dimension in working condition (L × W × H)		mm	10770×4800×23550
5	Drilling rig dimension in transportation condition (L × W × H)		mm	17410×3500×3520
6	Weight of overall unit (standard configuration, excluding drilling tool)		t	88
7	Engine	Model	/	CUMMINS QSM11-C400
		Rated power/speed	kW	298 /(2,100r/min)
8	Hydraulic system	Max. working pressure of main pump	Mpa	35
		Max. working pressure of auxiliary pump	Mpa	30
9	Rotary drive	Max. torque	kN.m	280
		Rotational speed	rpm	6-22
10	Crowd cylinder (standard configuration)	Max. pressurization force	kN	210
		Max. lifting force	kN	220
		Travel	mm	6,000
11	Main winch	Lifting force	kN	260
		Max. single-rope speed	m/min	60
12	Auxiliary winch	Lifting force	kN	80
		Max. single-rope speed	m/min	65
13	Drilling mast	Left/right inclination	°	4 / 4
		Front inclination	°	5
14	Travel	Max. Traveling speed	km/h	1.5
		Max.Climbable gradient	%	35

13	Crawler	Width	mm	800
		External width (min.-max.)	mm	3,500~4,800
		Center distance between two longitudinal wheels	mm	5175



Transportation condition (excluding drill rod or drilling tool)



Working condition

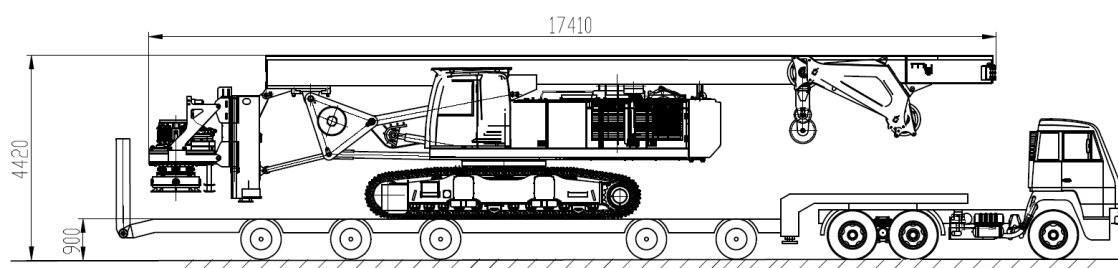
III. Configuration of Main Parts

List of main accessory manufacturers of XR280D rotary drilling rig

Key components	Brand	Producing area
Engine	CUMMINS	American
Hydraulic main pump	Rexroth	Germany
Hydraulic main valve	Rexroth	Germany
Hydraulic motor of rotary drive	Rexroth	China
Main winch reducer	Rexroth O&K	China
Travel reducer	Rexroth	China
Slewing reducer	Rexroth	China
Balancing valve	Rexroth	China
Controller	TTC	EU
Rotary drive reducer	BONFIGLIOLI	China

四、Transportation Scheme

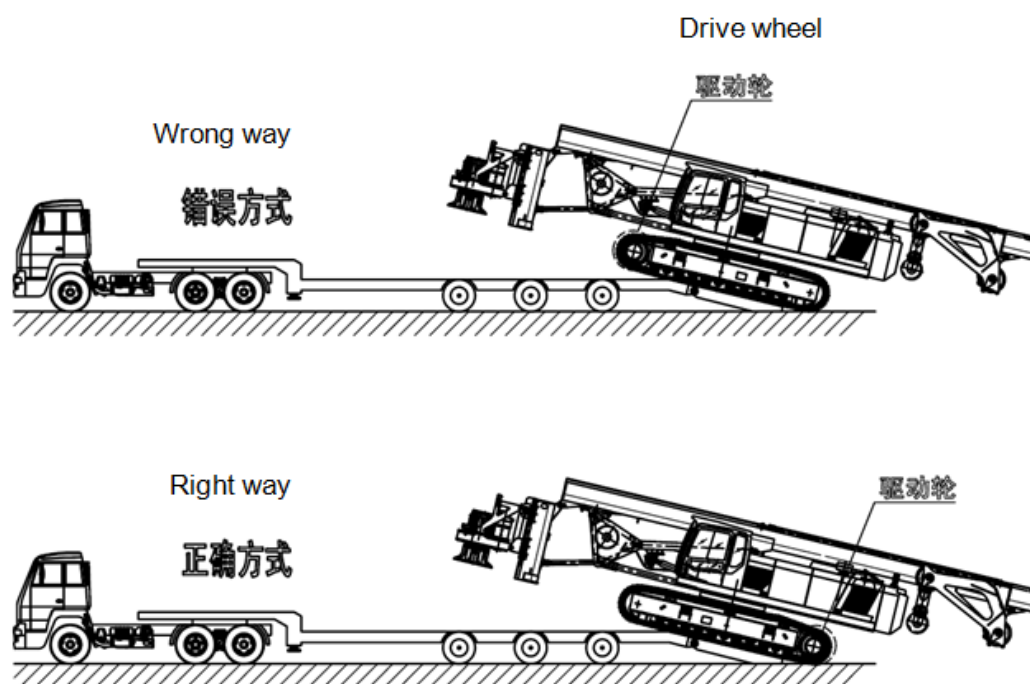
1. Complete Transportation



Transportation weight: 70t(excluding trailer, drill rod, drill bit)

Transportation width: 3,500mm. Crawler width: 800mm

装车示意图



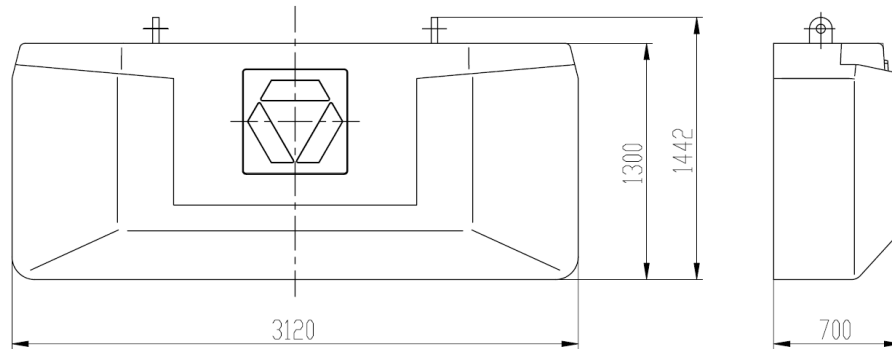
2. Disassembly Transportation

If the transportation weight exceeds the tonnage limit of highway, the disassembly transportation is required to transfer the equipment in long distance.

(1) Removal of counterweight

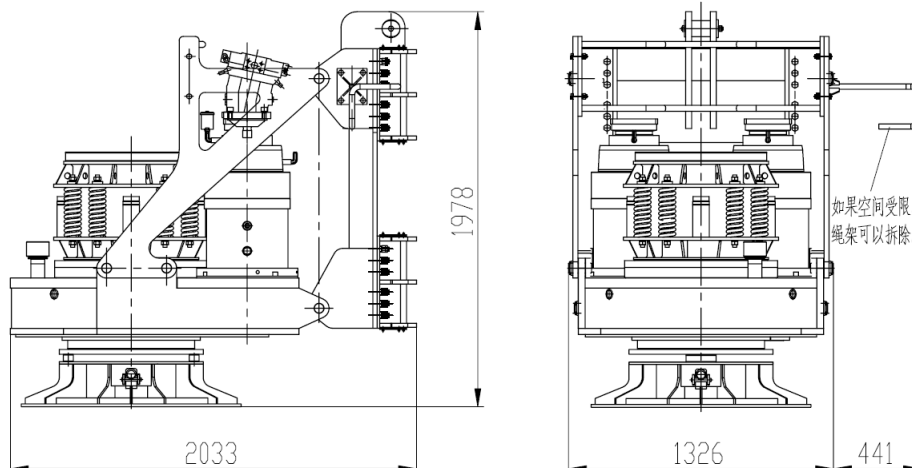
Remove the bolt connecting the counterweight and rotary table and remove the counterweight;

Counterweight weight: 8.9t; see the figure



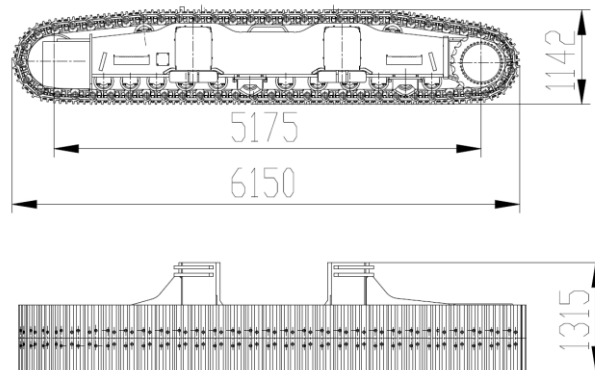
(2) Removal of rotary drive

- Remove the hose at the valve block of the rotary drive and transport the hose with the rotary drive
- Seal the hose with proper joint and end cap
- Seal the oil port of valve block with plate and end cap
- Use an auxiliary hoist to lift and dismount the rotary drive
- Weight of rotary drive assembly: 4.5t;
- See the right figure for overall dimension.



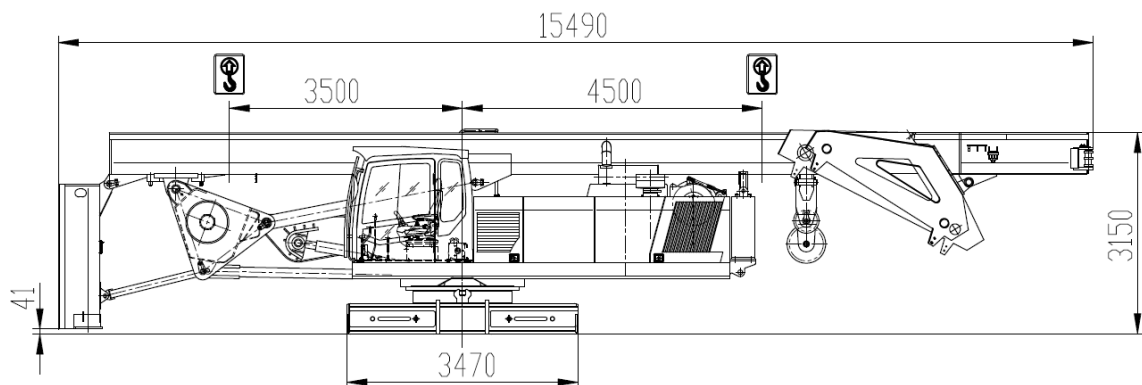
(3) Removal of left/right longitudinal beams and crawler assembly

- Remove retractable cylinder of crawler and connecting pin roll of left/right longitudinal beams;
- Remove hoses at left/right traveling motors and transport the hoses with main unit;
- Lift and remove the left/right longitudinal beams and crawler assembly by using an auxiliary crane.



Weight of left longitudinal beam and left crawler: 9.4t. See the figure above for overall dimension.

Weight of right longitudinal beam and right crawler: 9.5t. See the figure above for overall dimension.



(4) Main unit after disassembly of the drill rod, drilling bit, counterweight, rotary drive, drilling mast, left and right longitudinal beams and crawler assembly: weight: 38t; overall dimension is shown in the figure below; transportation width: 3,120mm.

(5) Lift the dismantled parts and upper structure onto the trailer and fix them firmly

V. Attached Technical Documents

XR280D rotary drilling rig is shipped with the packing list including the following technical documents:

Product Conformance Certificate

Product Operation Instruction

Transportation Operation Instruction for Rotary Drilling Rig

Packing List (including Wear and Spare Parts List, Driver's Tools List and Transportation Parts List)

Operation & Maintenance Manual for Engine

Operation Instruction for Reducer

Operation Manual for Drill Rod

General Operation Instruction for A/C