

1. Features

ZR220A rotary drill rig, as a high-performance and high-reliability piling product, is developed by our R&D team with technology quintessence over years of accumulated industry experience in design and manufacture of piling machinery, with international advanced technology integrated. As a high-tech machine integrated with mechanical, electrical and hydraulic systems, this product is of excellent operating performance and great adaptability, playing an important role in all fields of infrastructure projects in China. It is suitable for projects in railway, elevated railway, highway, bridge, tunnel, port and construction site.

It features high drilling torque and high operational efficiency, good mobility, versatility, wide range of applications, low-carbon environmentally-friendly, high performance, easy installation and facilitated operations, etc.

It is equipped with latest electro-hydraulic proportional directional valve and variable multiple piston-pump, integrated with displacement-variable system of load-sensitive and load-sensor control, putting the working capacities of all operating mechanisms into full play. Its undercarriage uses expandable tracks, and other features available include self raising folding mast, telescopic Kelly-bar. It can perform auto depth detection, auto verticality adjustment, auto slewing positioning, direct display of working status parameters by integrated monitoring system, and the logic functional control that can prevent false operations. It features easy and flexible in operation, smooth in working and stepless speed regulation. All key components, such as wheels and tracks, hydraulics, controller, display, gearbox, electrical parts, come from highly reputed foreign manufacturers, thus resulting in strong power, stable performance and high reliability. Safety devices such as load limiter and complete illuminating system guarantee the safety in operation and night working.

По вопросам продаж и поддержки обращайтесь:

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2. Specifications

2.1 Model

ZR220A rotary drill rig

2.2 Technical specifications

ZR220A Technical specifications

Main parameters	Maximum drill torque, kN.m	220	Drilling depth Friction type/ Lockable type, m	60/48
	Maximum drilling diameter, mm	2000	operating weight, t	69
	Operating height mm	21050	Operating width mm	4400
	transport length mm	15500	transport height mm	3620
	transport width, mm	3000		
configuration	Engine			
	model	QSL9	manufacturer	Cummins
	Max. power kW	252	Rated speed r/min	2000
	displacement L	8.9	diameter mm	114
	stroke mm	145	Max. torque N.m	1424
	minimum specific fuel consumption g/kW.h	217	emissions standard	Euro III
	Hydraulic system			
	main pump	A8VO140LA1 KS	manufacturer	Rexroth
	auxiliary pump	CB-H25	manufacturer	Minfeng, Shanghai
	main valve	HV08	manufacturer	Parker
	auxiliary valve	6M4-15-1X	manufacturer	Rexroth
	Pilot valve	4WE6J6X	manufacturer	Rexroth
	Revolving table			
	Slew gearbox and motor	GFB36T3B68+ A2EF56-*/	manufacturer	Rexroth
	Chassis			
	Contact length of track, mm	4675	Distance between track centers I , mm	2300
	Distance between track center II , mm	3600	Track width mm	800
	Ground clearance mm	395	theoretical traction kN	423
	Travel speed km/h	2.26	gradeability %	30

Travel gearbox	GFT80T3B*	manufacturer	Rexroth
Luffing mechanism			
Distance from Kelly-bar to slew center I , mm	3828	Distance from Kelly-bar to slew center II , mm	4456
Main and Auxiliary winch			
Main winch motor	A2FE160/61W	manufacturer	Rexroth
Main winch gearbox	GFT80W3	manufacturer	Rexroth
Lifting force, Main winch, kN	196	Lift speed, Main winch m/min	62.5
Rope diameter, Main winch, mm	28		
Auxiliary winch gearbox	GFT36W3	manufacturer	Rexroth
Rope diameter, auxiliary winch mm	22		
Mast			
Mast inclination, front – rear °	5	Mast inclination, left °	4.5
Mast inclination, right °	4.5	Maximum feed force kN	180
Maximum pull-up force, kN	200	Crowd cylinder stroke mm	5300
Power swivel			
Power swivel gearbox	EM1250/FE	manufacturer	Brevini
Power swivel motor	A6VM160HA2 T/63W-*	manufacturer	Rexroth
Power swivel torque, kN.m	220	Power swivel speed r/min	7~26
Kelly-bar			
Kelly-bar type	Friction	Size	φ440-5×13.3
Kelly-bar manufacturer	optional	Maximum drill depth m	60
Kelly-bar type	Lockable	Size	φ440-4×13.3
Kelly-bar manufacturer	optional	Maximum drill depth m	48

2.3 Appearance in transport (dimension unit: mm)

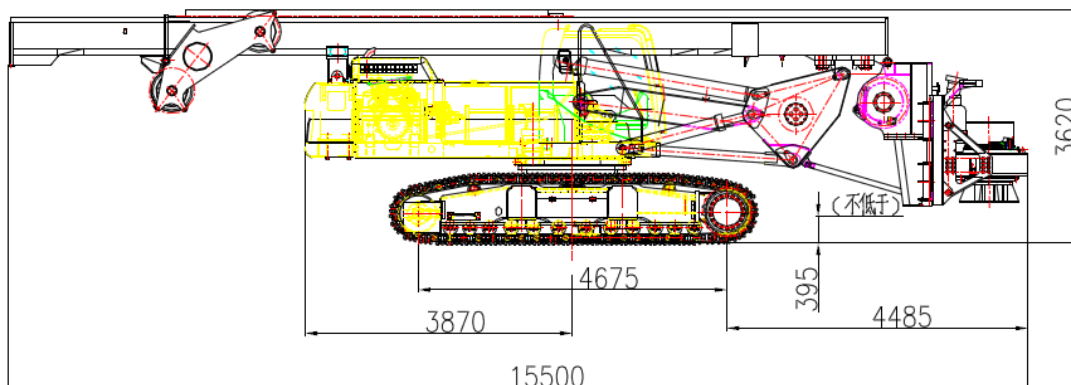


Fig 1. Appearance in transport

Operating weight:	69000kg
Operating width:	4400mm
Operating height:	21050mm
Transport width:	3000mm
Transport height:	3620mm
Transport length:	15500mm

3. Specifications of mechanisms

3.1 Travel mechanism

The travel mechanism is composed of travel gearbox, hydraulic travel motor, sprockets, idlers and tensioners, tracks, track rollers, carrier rollers. The travel mechanism is controlled by hydraulic system, it can move forward and backward, making left and right turns and slewing moves.

Travel gearbox and motor:	GFT80T3B*+A2FE107/61W
Traction:	423KN
Travel speed:	2.26 km/h
Contact length of track:	4675mm
Distance between track centers:	2300~3600mm
Track width:	800mm

3.2 Chassis

The chassis of drill rig is composed of engine, hydraulic system, electrical system, oil tank, fuel tank, counterweight, slewing mechanism, main winch, auxiliary winch and driver cab etc.

Engine model:	QSL9
Engine power:	252 kW
Engine speed:	2000 r/min
Slew gearbox & motor:	GFB36T3B68+A2FE56-*
Slew speed:	3 r/min
Lifting force, Main winch:	196 kN
Rope diameter, Main winch:	28mm
Lift speed, Main winch:	62.5m/min
Lifting force, Auxiliary winch:	110kN
Rope diameter, Auxiliary winch:	22 mm
Lift speed, Auxiliary winch:	66 m/min

3.3 Mast and Luffing mechanism

Mast acts as the mounting base for Kelly-bar and power swivel. The mast is of a three-section foldable type, which consists of the upper, middle and lower section. The luffing mechanism is composed of boom, triangular frame, strut, luffing cylinder and mast cylinder, etc. They are combined into a parallelogram mechanism.

Crowd cylinder stroke:	5300 mm
Maximum feed force:	180 kN
Maximum pull-up force:	200 kN
Mast inclination, sideways:	4.5°
Mast inclination, front:	5°

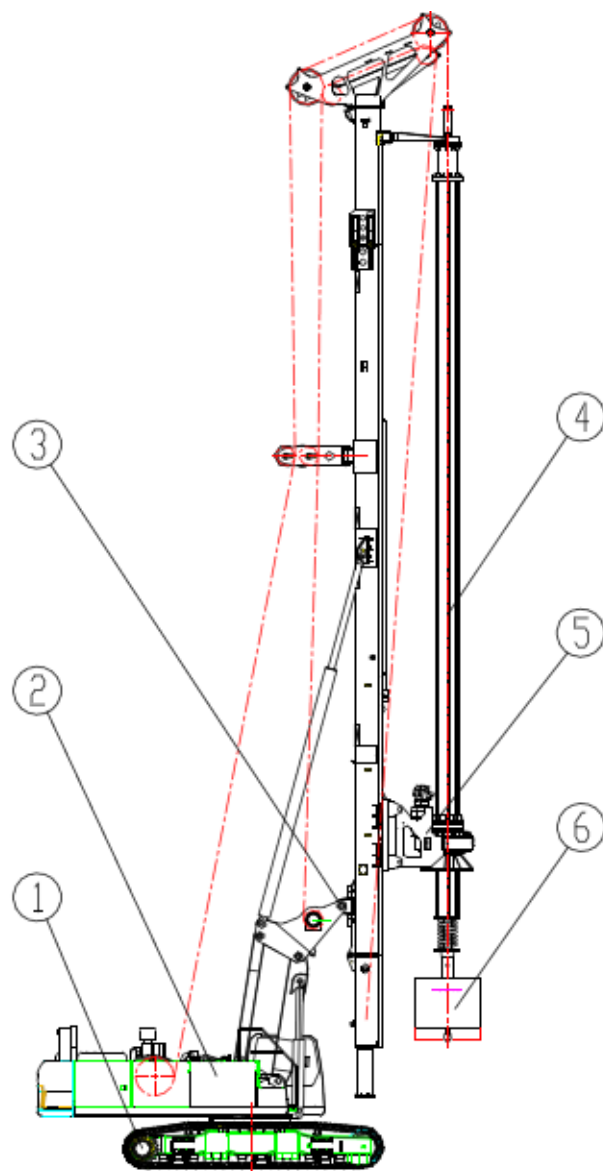


Fig 2. Classification of main mechanisms

3.4 Kelly-bar

Telescopic Kelly-bar is used and there are two models available. One is a friction type ($\phi 440-5 \times 13.3\text{m}$) five-section Kelly-bar with a maximum drilling depth of 60 m; the other is a lockable one ($\phi 440-4 \times 13.3\text{ m}$) with a maximum drilling depth of 48 m.

Friction Kelly-bar:	$\phi 440-5 \times 13.3\text{m}$
Lockable Kelly-bar:	$\phi 440-4 \times 13.3\text{ m}$
Drilling depth for friction Kelly-bar:	60 m
Drilling depth for lockable Kelly-bar:	48 m

3.5 Power swivel

It is composed of two sets of gearbox, hydraulic motor and the final drive. Through speed reduction by the gearbox and final drive, the hydraulic motor drives the socket type inner tooth plate within the turntable, and then the Kelly-bar.

Drilling speed:	7~26 r/min
Maximum drill torque:	220 kN.m
Gearbox & motor for power swivel:	EM1250/FE+ A6VM160HA2T/63W

3.6 Drill tools

The drill tools are used to drill into and/or take soil out. According to different layer conditions, operator can conduct a productive operation by selecting proper drill tools, together with corresponding Construction Method. Zoomlion can supply many kinds of drill tools together with drill rig to meet demands for different working conditions.

It is recommended for this machine to use drill bucket of 800mm-2000mm diameter.

Models of drill bucket:

1. single-cut round-shank-chisel bucket
2. double-cut round-shank-chisel bucket
3. single-cut flat-tooth drill bucket
4. double-cut flat-tooth drill bucket
5. drill barrel
6. roller cone drill barrel
7. single-cut bucket
8. single-cut single-screw auger
9. double-cut single-screw auger
10. double-cut double-screw auger
11. grabbing drill barrel
12. split drill bucket

Maximum drilling diameter:	2000 mm
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APPENDIX**Main parts and assemblies**

No.	NAME	MANUFACTURER	REMARK
1	engine	Cummins	
2	composite radiator	AKG	
3	composite oil radiator	Binglun, Yantai	
4	main pump	Rexroth	
5	auxiliary pump	Minfeng, Shanghai	
6	main valve	Parker	
7	auxiliary valve	Rexroth	
8	pilot valve	Rexroth	
9	electromagnet valve	Rexroth	
10	relief valve	Rexroth	
11	fitting, plug	Parker	
12	slewing Ring	Tianlong, Xuzhou	
13	slew gearbox & motor	Rexroth	
14	gearbox & motor for power swivel	Brevini/Rexroth	
15	cylinder	Teli, Hunan	
16	gearbox & motor for main winch	Rexroth	
17	gearbox & motor for auxiliary winch	Rexroth	
18	gearbox & motor for travel	Rexroth	
19	hydraulic oil	Mobil AW46	
20	gear oil	Mobil SHC220	

Note: product configuration may be changed due to reasons about design or others, so configuration above is for reference only.

The logo for ZOOMLION, featuring the word "ZOOMLION" in a bold, dark blue, sans-serif font. The text is centered within a light green parallelogram that has a slanted right edge.

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