

1. Features

ZR250B 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.

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2. Specifications

2.1 Model

ZR250B rotary drill rig

2.2 Technical specifications

ZR250B Technical specifications

Main parameters	Maximum drill torque, kN.m	250	Drilling depth Friction type/ Lockable type, m	84/56
	Maximum drilling diameter, mm	2500	operating weight, t	78
	Operating height mm	23235	Operating width mm	4400
	transport length mm	16800	transport height mm	3620
	transport width, mm	3100		
configuration	Engine			
	model	QSL9	manufacturer	Cummins
	Max. power kW	242	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			
	main valve	HV08	manufacturer	Parker
	auxiliary valve	6M4-15-1X/	manufacturer	Rexroth
	Pilot valve	4WE6J6X/	manufacturer	Rexroth
	Revolving table			
	Slew gearbox and motor	GFB36T3B68+ A2FE56-*	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	412	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	4311	Distance from Kelly-bar to slew center II , mm	4950
Main and Auxiliary winch			
Main winch motor	A6VM200HD1D	manufacturer	Rexroth
Main winch gearbox	717C3H10A	manufacturer	Bonfiglioli
Lifting force, Main winch, kN	274	Lift speed, Main winch m/min	68
Rope diameter, Main winch, mm	32		
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	200
Maximum pull-up force, kN	220	Crowd cylinder stroke mm	5300
Power swivel			
Power swivel gearbox	EM1250/ZD	manufacturer	Brevini
Power swivel motor	A6VM160HA2T/	manufacturer	Rexroth
Power swivel torque, kN.m	250	Power swivel speed r/min	6~24
Kelly-bar			
Kelly-bar type	Friction	Size	Φ508-6×15.5
Kelly-bar manufacturer	optional	Maximum drill depth m	84
Kelly-bar type	Lockable	Size	Φ508-4×15.5
Kelly-bar manufacturer	optional	Maximum drill depth m	56

2.3 Appearance in transport (dimension unit: mm)

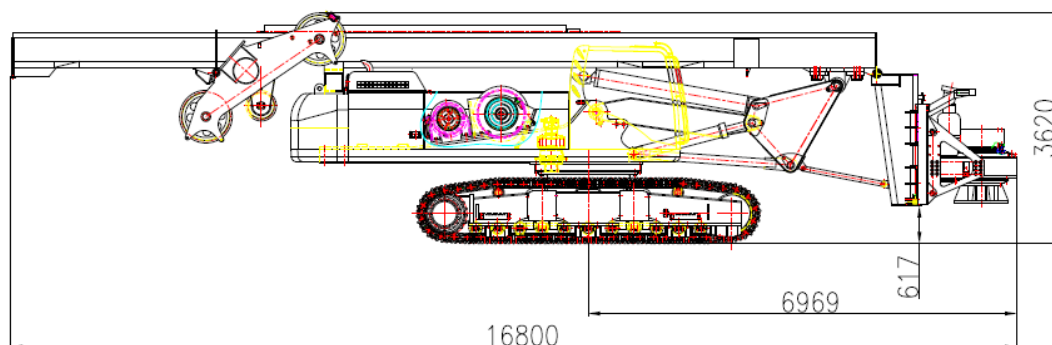


Fig 1. Appearance in transport

Operating weight:	78000kg
Operating width:	4400mm
Operating height:	23235mm
Transport width:	3100mm
Transport height:	3620mm
Transport length:	16800mm

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:	242 kW
Engine speed:	2000 r/min
Slew gearbox & motor:	GFB36T3B68+A2FE56-*/61W
Slew speed:	3 r/min
Lifting force, Main winch:	274 kN
Rope diameter, Main winch:	32mm
Lift speed, Main winch:	68m/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:	200 kN
Maximum pull-up force:	220 kN
Mast inclination, sideways:	4.5°
Mast inclination, front:	5°

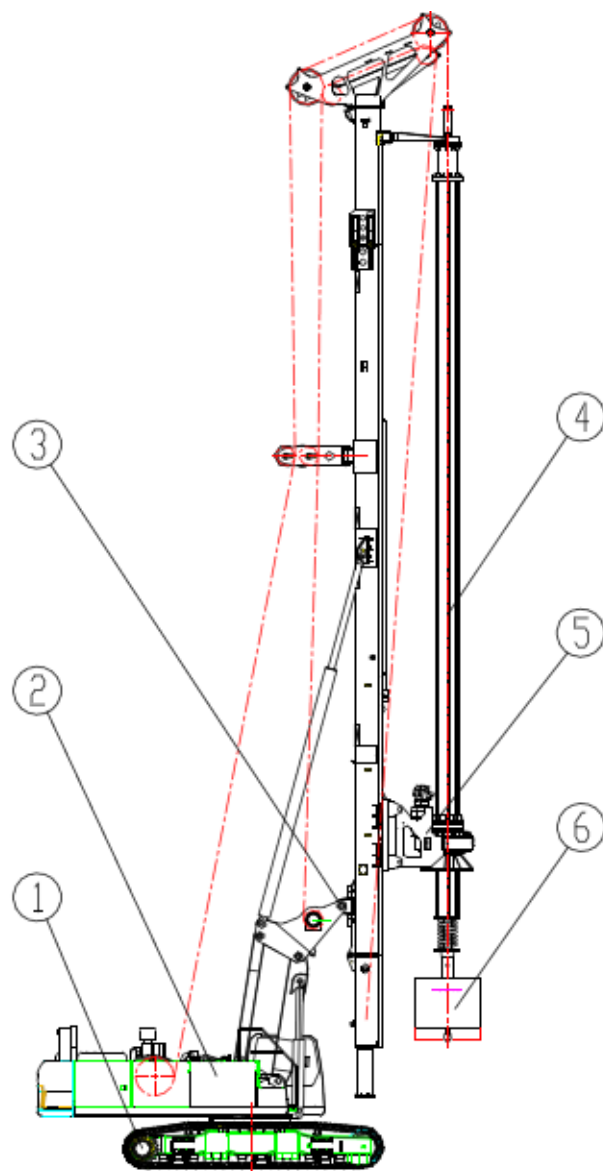


Fig 2. Classification of main mechanisms

3.4 Kelly-bar

Telescopic Kelly-bar is used and there are two models available. One is a friction type ($\phi 508-6 \times 15.5\text{m}$) six-section Kelly-bar with a maximum drilling depth of 84 m; the other is a lockable one ($\phi 508-4 \times 15.5\text{ m}$) with a maximum drilling depth of 56 m.

Friction Kelly-bar:	$\phi 508-6 \times 15.5\text{m}$
Lockable Kelly-bar:	$\phi 508-4 \times 15.5\text{ m}$
Drilling depth for friction Kelly-bar:	84 m
Drilling depth for lockable Kelly-bar:	56 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:	6~24 r/min
Maximum drill torque:	250 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-2500mm 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:	2500 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	Rexroth	
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	Bonfiglioli/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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