

ROBBINS 91/123

Large-size raise boring
machines for holes ranging
from 2.4 to 6.0 m (8-20 ft.) in
diameter



Atlas Copco



COMPACT AND POWERFUL

THE ROBBINS 91 AND ROBBINS 123 RIGS ARE POWERFUL RAISE-BORING RIGS WITH A MODULAR DESIGN FOR EASY TRANSPORT WHEN WEIGHT OR SIZE LIMITATIONS CAN BE A SERIOUS CONCERN. THESE RIGS DRILL HOLES FROM 2.4 TO 6.0 M (8-20 FT.) IN DIAMETER AND CAN BE RELIED ON IN A VARIETY OF APPLICATIONS. AT ATLAS COPCO, WE STRIVE TO CONSTRUCT HIGH-QUALITY MACHINES THAT ARE EASY TO SET UP, OPERATE AND MAINTAIN – AND OUR ROBBINS 91 AND 123 RIGS ARE NO EXCEPTION. THESE MACHINES ARE BUILT TO SERVE AND BUILT TO LAST.

+ MAIN BENEFITS

Power you can depend on The powerful 500-kW electric motor drives the reamer to penetrate the hardest rock.

Easy maintenance and transport The gear box is installed in a removable barrel, allowing the derrick to be split into smaller, more transportable components.

Steadfast and efficient Standard functions include anti-jamming, auto makeup and the gradual ramp-up of speed and torque.

Durable columns with crown couplings to enable smooth, low-vibration performance



Ram bar provides support of the drill string on inclined raises

Hydraulic wrenching to reduce heavy manual lifting

Dual hydraulic pumps to keep the rig up and running

Hydraulic drive controls to regulate speed and torque

Handy connections on all hydraulic hoses to enable quick, easy setup and maintenance



EFFICIENCY AND RELIABILITY WHEN THE GOING GETS ROUGH

TOUGH ROCK CONDITIONS DO NOT FAZE THE ROBBINS 91/123 RAISE BORING RIGS. THESE MACHINES HAVE EXTRAORDINARY PULLING POWER, AND THE HYDRAULIC SYSTEM ENABLES TREMENDOUS TORQUE TO BE MAINTAINED AT HIGH ROTATION SPEEDS. WORK BECOMES MORE EFFICIENT, RELIABLE AND USER FRIENDLY WHILE OVERALL ENERGY AND MAINTENANCE COSTS ARE REDUCED.



+ A TOUGH ROBBINS FOR EVERY CHALLENGE

The large-size Robbins rigs are available in three different models to best suit your needs. The 123RH C features a hydraulic drive, while the electric 123 RVF C features a variable-frequency drive. The 91RH C is the latest addition to the Robbins series, allowing efficient raise boring in deeper underground mine locations. The powerful hydraulic drive on the 91RH C makes it ideal for large raises of up to 5.0 m (17 ft.).



+ RELIABILITY THROUGH THE DECADES

Raise boring rigs from Atlas Copco have been setting the industry standard for more than fifty years. We continue to lead thanks to outstanding equipment design and excellent quality. Our raise bores include only premium components, and all Robbins machines come with a 12-month (2000-hour) warranty.



+ EASY TRANSPORT

The gear box on the Robbins 91 or 123 is installed in a barrel that can be removed to split the derrick into smaller components for easier transport in constricted work spaces or when weight limitations apply. The compact Robbins 91RH C has a low minimum back height while its modular design allows it to be disassembled into relatively small components. Robbins components can be reduced to weigh 7 000 kg or less for greater transportability.

ATLAS COPCO SERVICE – IT'S NOT JUST ABOUT OUR PROMISES, IT'S ABOUT DELIVERY

We offers several levels of service agreements to meet the requirements of your operation and to secure your productivity. Our service agreements help you build a quality operation focused on proactive, planned maintenance to minimize unplanned downtime. We support maintenance with detailed parts information on every piece within our full inventory of components, accessories, and tools.



GEARBOX

Planetary-type reduction
Spherical roller thrust bearing for reaming
Pre-loading of the bearings
Smaller thrust bearing for pilot hole drilling
Spring pre-loaded bearing

DRIVEHEAD

	A	B	C
Floating drive box with D22	●		
Floating drive box with D42		●	●

PIPELOADER

Ground loading
Remote controlled

MOTOR

	A	B	C
413 kW 3 phase AC motor			●
Two hydraulic motors connected in series CA70/210	●	●	

LUBRICATION

	A	B	C
Filtration 25 μ	●	●	●
Water cooled	●	●	●
Electric driven submersed gear pump, built-in to the gear box 19 l/min (5 gal/min)	●	●	●
Hydraulic driven lubrication pump motor on Derrick	○	○	○

WRENCH SYSTEM

	A	B	C
A Semi-automatic Drivehead wrench	●	●	●
Worktable, hydraulic horse shoe wrench	●	●	●

ELECTRICAL SYSTEM

	A	B	C
Separate cabinet inside the drive pack	●	●	
Standard protection ground fault, over / under voltage	●	●	●
Phase fault and emergency stop	●	●	●
Thermal overload protection for electrical motors	●	●	●
Anti-condensation heaters in electrical cabinet	●	●	●
Built in heaters in the electrical motor	●	●	●
Drive motor started by softstarter	●	●	
Direct start of thrust motor	●	●	●
Auxiliary outlet 115/230 V (16A)	●	●	●
Main breaker with overload and short circuit protection.	●	●	●
Electrical standards UL, CSA or AS3000 CE	●	●	
20 m Cables to derrick	○	○	○
30 m Cables to derrick	○	○	

DRIVE AND THRUST SYSTEM

	A	B	C
Electrical filling/ drain pump	●	●	●
Off-line filtration system	●	●	●
Fire suppression system	○	○	○
High pressure filtration	○	○	○
Extended hoses to Derrick (15 or 20 m)	○	○	○
Built-in heater in oil reservoir	○	○	○
Closed loop cooling system	○	○	●
Electrical drive system			
Variable frequency drive, water cooled			
External break resistor with chopper control			
Super capacitor battery			
Choke filter 820A			
Temp sensors in motor winding and bearings			
High resolution rpm encoder on motor			
Hydraulic drive system			
Power 500 kW at 50/60Hz			
Rotation pump 500 cm3/rev			
Max pump pressure 330 bar (4 900 psi)			
Oil reservoir 400 l (105 gal)			
Water cooled			
Oil filtration 10 microns			
Mineral hydraulic oil			
Thrust system			
Power 75/85 kW at 50/60 Hz			
Oil reservoir 580 l (150 gl)			
Oil filtration 10 microns			
Mineral hydraulic oil			
Proportional control of fast traverse and pipeloader movements			
Water cooled			
Travers pump max pressure 230 bar (3 300 psi)			
Pressure compensated variable displacement piston pump			
Trust pump max pressure 330 bar (4 800 psi)			
Fixed displacement gear pump			
Auxiliary pump max pressure 250 bar (3 300 psi)			

CONTROL SYSTEM

	A	B	C
Atlas Copco Rig Control System (RCS)			
Net force control			
Bailing pressure supervision			
Auto make up log			
Radio remote control for pipeloader			
Power management			
Underground Manager MWD (PC software) for analysis of drill data	○	○	○
Rig Remote Access (RRA), LAN or WLAN connection	○	○	○
The advanced Radio remote control	●	●	●
Surveilance kit (Length sensor, reamer drop detection, pressurized drill string surveillance, angle indication)	●	●	●
Bailing pump control and power outlet	○	○	○
Extended cable to operator panel (20 or 30 m)	○	○	○
Operators platform	○	○	○

A = 91RH
 B = 123RH
 C = 123RVF

○ = OPTION
 ● = STANDARD

DELIVERED EQUIPMENT NOT MOUNTED	A	B	C
Operating equipment			
Drilling toolkit (Starter bushing, bit breaker box, Blooie system, floatbox installation tool)	○	○	○
Equipment tools			
Makeup and breakout tool (MBT)	○	○	○
Drivehead installation/removal tool	○	○	○

TRANSPORTERS	A	B	C
Diesel crawler	○	○	○
Sled assembly	○	○	○

CLOSED LOOP REFRIDGERATING SYSTEM (VF ONLY)
Fully automated temperature control
Quick disconnections
Temperature up to 40° C for ambient temperature
Produce cooling water for the complete system
Cooling media: glycol/water mix

CLOSED LOOP AIR/OIL COOLING SYSTEM (HYDRAULIC)
Quick disconnections
Temperature up to 40° C for ambient temperature
Two radiators
Cooling media: glycol/water mix

OPERATION DATA	A	B	C
Raise diameter			
Nominal 4.5 m / 15 ft	●		
Nominal 5.0 m / 16 ft		●	●
Range 2.4 m-5.0 / 8-16 ft	●		
Range 3.1-6.0 m / 10-20 ft		●	●
Raise length			
Nominal 600 m / 1 970 ft, Maximum 1 000 m / 3 280 ft	●		
Nominal 900 m / 3 000 ft, Maximum 1 100 m / 3 600 ft		●	●
Maximum torque			
Reaming 450 kNm / 330 000 ft-lbs	●		
Reaming 540 kNm / 398 000 ft-lbs		●	●
Break out 700 kNm / 516 300 ft-lbs	●	●	●
Reaming thrust			
6 700 kN at 330 bar / 1 510 000 lbs at 4 800 psi	●		
8 923 kN at 330 Bar / 2 000 000 lbs (at 4 800 psi)		●	●
Stroke			
2 160 mm / 85"	●	●	●
RPM			
Pilot 0-54	●	●	
Reduced torque 0-7 rpm (7-14 rpm)			
Pilot 0-50 rpm			●
Reduced torque 0-7 rpm (7-14 rpm)			
Traverse rate			
Fast traverse rate 1.7 m/min, 5.6 ft/min	●	●	●
Feed rate 0.5 m/min, 1.6 ft/min	●	●	●
Bailing			
Air 18 m ³ /min (7 bar), 636 ft ³ /min (100 psi)	●		
Air 25 m ³ /min, 883 ft ³ /min		●	●
Water 600 l/min, 159 gal/min	●		
Water 800 l/min, 176 gal/min		●	●
Electrical			
Power supply 580/650 kW (50/60Hz), 789/884 hp	●	●	
Power supply 490 kW (50/60Hz), 657 hp			●
Voltage 400-1000 V	●	●	
Voltage 460/690 V (50/60Hz)			●
Frequency 50-60 Hz	●	●	●
Power requirement 706/791 kVA (50/60Hz)	●	●	
Power requirement 580 kVA (50/60Hz)			●
Drill pipe			
Diameter 327 mm, 12-7/8"	●		
Diameter 333 mm, 13 1/8"		●	●
Length s/s 1 524 mm, 60"	●	●	●
Pilot hole			
Diameter 349 mm, 13-3/4"	●		
Diameter 381mm, 15"		●	●
Cooling water at 25°C inlet temp.			
160 l/min, 42 gal/min	●	●	



Robbins 91RH Derrick



Robbins 123RH Derrick



Drive pack



Thrust pack



Cooling pack

MEASUREMENTS AND WEIGHTS DERRICK (91RH)

Height extended	5 100 mm (201")
Height retracted	4 100 mm (162")
Width	2 300 mm (90")
Width pipeloader included	3 800 mm (150")
Depth	2 700 mm (107")
Weight	32 100 kg (70 768 lb)
Weight pipeloader included	33 700 kg (74 296 lb)
Drill angle (from horizontal)	90-60°

MEASUREMENTS AND WEIGHTS DERRICK (123 RH/RVF)

Height extended	5 700 mm (224")
Height retracted	4 100 mm (162")
Width	2 300 mm (90")
Width pipeloader included	3 800 mm (150")
Depth	2 700 mm (107")
123RH C Weight	30 400 kg (67 020 lb)
123RV F Weight	33 300 kg (74 295 lb)
123RH C Weight pipeloader included	32 000 kg (70 550 lb)
123RV F Weight pipeloader included	35 300 kg (77 823 lb)
Drill angle (from horizontal)	90-60°

MEASUREMENTS DRIVE PACK (91RH/123RH)

Length	3 400 mm (134")
Height	1 800 mm (71")
Width	1 900 mm (75")
Weight	7 100 kg (15 650 lb)

MEASUREMENTS DRIVE PACK (123RVF)

Length	3 100 mm (122")
Height	1 800 mm (71")
Width	1 900 mm (75")
Weight	2 500 kg (5 500 lb)

MEASUREMENTS THRUST PACK (91RH/123TH/123RVF)

Length	2 300 mm (90")
Height	1 540 mm (60")
Width	1 400 mm (55")
Weight	2 200 kg (4 850 lb)

COOLING PACK (123RVF ONLY)

Length	2 320 mm (91")
Height	2 450 mm (97")
Width	1 540 mm (60")
Weight	2 040 kg (4 500 lb)

COMMITTED TO SUSTAINABLE PRODUCTIVITY

We stand by our responsibilities towards our customers,
towards the environment and the people around us.

We make performance stand the test of time.
This is what we call – Sustainable Productivity.

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