Atlas Copco Exploration Products

Explorac reverse circulation rigs

Sustainable Productivity
Today, reverse circulation is the preferred method for initial exploration, ore body development and in-pit grade control. The technology has gained ground for its speed, efficiency and ability to provide accurate samples for evaluation by geologists. And Atlas Copco continues to drive the development of new and improved technologies.

Atlas Copco was early to adopt the reverse circulation technology. In cooperation with professional Australian pioneers, we developed the first drilling rig truly tailored for reverse circulation drilling – the Explorac 220RC. Before its inception, drillers had to modify existing rigs for reverse circulation drilling of deep exploration holes.

**What is reverse circulation drilling?**

Reverse circulation is based on a dual pipe system. Air passes to the hammer between the inner and the outer tube. Cuttings are collected through the inner pipe, passing through a swivel and continuing to a cyclone. A representative sample is collected through the splitter. By sealing the drill bit from the rest of the hole, the samples are kept dry which simplifies analysis.
Committed to reverse circulation
The Explorac 235 reverse circulation drilling rig is a new and improved version of the Explorac 220RC, designed for deep-hole drilling up to 400 m. The Explorac 100 is a new reverse circulation drilling rig for drilling depths of 100–200 m which is also suitable for other down-the-hole drilling applications. Additional reverse circulation drilling rigs from Atlas Copco are planned for release in the coming years.

Improved performance
Both the Explorac 235 and 100 allow exploration professionals to enjoy a new level of safety, reliability and efficiency. Both drilling rigs come with an automatic rod handler and breakout table. They have higher power, torque and pressure than previous rig generations. While specialized for minerals exploration, Explorac rigs can be easily adapted for water well drilling.

Full range of services
With Atlas Copco, you are backed up by a global partner that is committed to supporting you in your local market. Our complete solutions include a wide range of tools and services – aimed at improving your safety, productivity and competitiveness.
A COMPLETE PACKAGE
from Atlas Copco

An Explorac package from Atlas Copco can be delivered as a complete system, from the drill bit to the sample splitter. You avoid loose ends in your system and can easily meet the continuous need for compressed air and consumables.

Reverse circulation is a drilling method in demand for use throughout the world. It is known for its cost structure, meter rate drilled, speed, maintained accuracy and sampling efficiency.

As a pioneer in the design and manufacturing of down-the-hole equipment and sample systems, Atlas Copco is a leading provider of reliable and cost effective reverse circulation system solutions.

We can provide a complete solution, including drilling rig, drill string, compressor and booster. As a one-stop-shop for reverse circulation, we can ensure optimum system performance and maximum drilling productivity, whether in greenfield exploration or in pit grade control.
Portable air compressors

Atlas Copco DrillAir™ portable air compressors offer large air volumes at high air pressure. This makes them highly energy efficient through low specific fuel consumption for the air delivered. A 35-bar compressor allows deeper drilling with the Explorac 100, without the need for a booster.

<table>
<thead>
<tr>
<th>Pressure</th>
<th>l/s</th>
<th>cfm</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 bar</td>
<td>XRVS 577*</td>
<td>1210*</td>
</tr>
<tr>
<td></td>
<td>XRVS 647</td>
<td>1350</td>
</tr>
<tr>
<td>30 bar</td>
<td>XRXS 607</td>
<td>1275</td>
</tr>
<tr>
<td>35 bar</td>
<td>XRXS 527*</td>
<td>1150*</td>
</tr>
<tr>
<td></td>
<td>XRXS 577</td>
<td>1260</td>
</tr>
</tbody>
</table>

Notes:  
* Models shown in photographs are highlighted with bold text.  
* Model not available for US, Canada and Europe due to local engine emission legislation.

Hurricane boosters

Atlas Copco Hurricane boosters are small and light, yet provide as much power as larger and heavier competitor units. The boosters offer you faster pressure build-up, higher penetration rate, cooler bit temperatures and longer bit life. The high pressure also keeps your samples dry in wet areas.

Reverse circulation drilling equipment

Atlas Copco offers a complete range of reverse circulation rock drilling tools available for the Explorac 100 and 235. The drill string equipment is designed specifically for greenfield exploration and in-pit grade control.

**Air swivel**  
The side inlet swivel distributes the air in between the outer and inner tube.

**Saver sub**  
The saver sub protects the threads on the rotation head. The saver sub thread comes into contact with all the other threads in the drill string and should be replaced frequently to reduce the risk of a damaged thread spreading through your drill string.

**Drill pipes**  
The dual-wall pipe supplies air to the hammer through the annulus between the inner and outer pipe, and transports cuttings inside the inner tube for sampling.

**Digout sub**  
A digout sub is a short crossover sub between the hammer and pipes. With 4 bars, it stabilizes the hammer and prevents damage to the hammer when digging out holes.

**Hammers**  
RC50 high-frequency reverse circulation hammers offer world-class performance and reliability in all rock formations, with 15–20 percent higher penetration than conventional tools.
ALL THE BENEFITS you are looking for in a rig

Explorac reverse circulation drilling rigs were developed in cooperation with exploration professionals. Every component has been carefully designed to provide excellent drilling results and to meet demands from contractors, miners and geologists – while ensuring operator safety and minimum environmental impact.

Safety

Safety must always come first. The rig’s rod handler allows the operator to stand outside the hazardous zone. The hands-free breaking tables eliminate the human factor, allowing for safe operation of all breakout functions. All functions are carried out via easy-to-use remote control.

Reliability

Reliability is essential when drilling in remote locations. Explorac rigs are based on proven and tried technology and simple design, which ensures continuous and uninterrupted operation – even in the harshest conditions. With Explorac, there is no need to rely on luck.
Service friendliness

Each rig has been designed with ease of maintenance in mind. All functions are managed by the electronic control unit, which makes troubleshooting easy. The Atlas Copco global service organization ensures ready availability to maintenance, repairs and spare parts.

Environment

Noise-reducing canopies, an enclosed power pack and smart cooling fans keep noise levels at industry best practice levels. A low-emission engine, designed to minimize hydrocarbon spills, reduces the impact on the surrounding environment while lowering running costs.

Efficiency

Drilling costs are kept low thanks to down-the-hole equipment that has been optimized to match the rig’s air and hydraulics. Fast hydraulics with user-friendly controls and hands-free handling means faster rod pulls and less time spent on other non-productive tasks.

Fast setup

With its drill rods and other systems on board, the Explorac can be set up quickly and start drilling within minutes of arrival at the site. Thanks to the rod handler, one person is sufficient to automatically handle the rods as quickly as using manual handling.
After 30 years of successful track record, the Explorac R50 is replaced by the new Explorac 100. The new rig is designed specifically for reverse circulation drilling and other down-the-hole drilling applications.

The Explorac 100 shares the same simple and rugged design of the R50, making it reliable as well as easy to service. Its high accessibility and reliability makes it highly suitable for drillers operating in remote areas. The Explorac 100 is available on a crawler chassis.

You can drill with dual wall drill pipes with outer dimensions 3.5, 4 or 4.5 inches. The Explorac 100 is delivered with a productive rod handler as standard including a 30-pipe rack. A mechanized breakout table also comes as standard. The rig can work with air pressures up to 35 bars.

Add as option one of Atlas Copco’s many DrillAir™ portable air compressors. See page 5 for further information.

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**Explorac 100 technical data**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Hole depth</td>
<td>100–200 m</td>
</tr>
<tr>
<td>Lifting capacity</td>
<td>10.5 tons</td>
</tr>
<tr>
<td>Speed</td>
<td>2–3 km/h</td>
</tr>
<tr>
<td>Handling winch</td>
<td>15 kN</td>
</tr>
<tr>
<td>Pulling winch</td>
<td>35 kN</td>
</tr>
<tr>
<td>Power pack</td>
<td>Tier 3A, Cummins 82 kW</td>
</tr>
<tr>
<td>Max air pressure (external comp.)</td>
<td>35 bar</td>
</tr>
<tr>
<td>Max climbing</td>
<td>24 degrees at total weight 16 ton</td>
</tr>
<tr>
<td>Max grip dia</td>
<td>380 mm</td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
</tr>
<tr>
<td>- Wireline winch</td>
<td>3.0 kN, 300 m cable</td>
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</table>

**Summary of Explorac 100 features**

**Safety**
- Rod handling as standard, including a 30-pipe rack
- A mechanized breakout table with two spanners
- The operator’s panel strategically placed on a tripod or carried on operator’s shoulder

**Environmental care**
- Low noise level
- Tier III, Cummins power pack, 82 kW
- Oil drainage conveniently designed

**General**
- Lifting capacity 10.5 ton
- Mud pump option, 600 liters/min on truck version (under development)
The Explorac 235 is a new and improved version of the Explorac 220 RC model, which was developed in cooperation with Australian reverse circulation drilling pioneers to ensure optimum performance.

The Explorac 235 meets all the challenges of exploration with reverse circulation. While designed specifically for reverse circulation drilling to depths of 300–400 meters, the rig can be easily adapted for water well drilling. The Explorac 235 is available for assembly on a truck or crawler chassis.

Safe and user-friendly rod handling is available from a rack, a supply truck or the ground. Other safety features include radio-controlled trarming and a safety cage preventing operators from being close to turning items.

The Explorac 235 is equipped with a fully hydraulic slips table with top and lower spanners, guides, clamps, and holds any tool with a 305-mm opening. A hydraulic wrench performs all breakout functions safely of any tool.

The fully enclosed power pack and cooling fans reduce the noise level. Air power is supplied by the latest XRY12 compressor, providing a pressure of max 35 bars (510 psi). The air system is prepared for external booster connection up to 70 bars.

The control panel can be positioned up to 10 meters from the rig, providing safety and visibility. The display shows all information parameters and warnings for the power pack, compressor and hydraulic system.

The integrated cyclone and sample collection system allows continuous, dust-free sampling with little or no pause in the drilling process. 2, 3, 4 or even 5 tier splitters can be fitted under the cyclone for efficient sample collection.

**Explorac 235 improvements**

- A new rod handler developed by Atlas Copco
- 35-bar air pressure compared to the previous 30 bars
- A new and improved rig control system, RCS4

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### Explorac 235 technical data

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Metric</th>
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<tbody>
<tr>
<td>Hole depth</td>
<td>300–400 m</td>
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<tr>
<td>Lifting capacity</td>
<td>22 tons</td>
</tr>
<tr>
<td>Speed</td>
<td>2–3 km/h</td>
</tr>
<tr>
<td>Handling winch</td>
<td>15 kN</td>
</tr>
<tr>
<td>Power pack</td>
<td>CAT C-18</td>
</tr>
<tr>
<td>Airpower compressor</td>
<td>XRY12</td>
</tr>
<tr>
<td>- Max pressure</td>
<td>35 bar (510 psi)</td>
</tr>
<tr>
<td>- Max volume</td>
<td>555 lit/sec (1200 cfm)</td>
</tr>
<tr>
<td>Max climbing</td>
<td>22 degrees at total weight 35 ton</td>
</tr>
<tr>
<td>Max grip dia</td>
<td>305 mm</td>
</tr>
</tbody>
</table>

### Options

- Fire suppression system
  - Thermostatically controlled fire extinguishing system.
- Wireline winch
  - 3.4 kN, 300 m cable
- Cone splitter
  - Three tier splitter is standard, fixed cone splitter is optional.
Purchase price is only one of many factors that affect total cost of ownership (TCO). In the long run, it is the total cost per drill meter that matters – and an Explorac rig from Atlas Copco will always be a winning concept.

**Premium brand**
The best measurement of your investment is cost per drill meter. Atlas Copco is recognized as a premium brand that delivers high availability and long maintenance intervals – ensuring market-leading low total cost of ownership.

**TCO calculator**
To simplify your purchasing decision, Atlas Copco has developed a total cost of ownership calculator. This software tool helps our sales personnel calculate your cost per drill meter, given all cost-affecting factors over the lifetime of your equipment – including operational, financial and performance factors.

**Lifetime productivity**
You are offered an accurate cost estimate that will make budgeting a lot easier. You will get an early indication how Atlas Copco premium quality factors affect total drilling cost. Add high operational efficiency, and you will enjoy the superb lifetime productivity that comes from operating an Atlas Copco rig.
Troublefree operation with Atlas Copco Service

Wherever you are in the world, as an Atlas Copco customer your service experience will always be exceptional. It’s all about our commitment, our service promise, our capability, our quality – and our aim to increase your productivity.

Lower cost, longer lifetime
To minimize maintenance and repair costs, and to increase your profitability, your equipment needs professional regular maintenance. Keeping your rig in good shape at all times reduces downtime costs and safeguards productivity.

Enjoy the peace of mind of a service agreement
An Atlas Copco service agreement gives you the peace of mind of long-term trouble-free operation. You can focus on your core business and let us ensure your continuous operation through proactive maintenance to minimize unplanned downtime. Contact your local Atlas Copco representative for information about service agreements.

A range of services for higher productivity
From genuine spare parts, equipment audits, operation and maintenance training through to full service agreements, we can help you maximize your equipment investment.

<table>
<thead>
<tr>
<th>Audits</th>
<th>Regular audits let us monitor the status of your equipment and serve as a basis for decision of planned service activities. We can also identify safety risks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled service</td>
<td>Regular scheduled service focuses on preventing drilling interruptions and minimizing the risk of unforeseen repairs.</td>
</tr>
<tr>
<td>Extended warranty</td>
<td>An extended warranty period helps you keep a tighter control of your cost of operation over the lifetime of your equipment.</td>
</tr>
<tr>
<td>Application support</td>
<td>Our service engineers have extensive experience of exploration drilling and will support you in maximizing the efficiency of your equipment.</td>
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</tbody>
</table>