ATLAS COPCO
BLASTHOLE DRILLS
PIT VIPER 311

Rotary drilling
Hole diameter 9 in – 12¼ in (229 – 311 mm)
Maximum hole depth 135 ft (41 m)
Visit WWW.ATLASCOPCO or contact your Atlas Copco oil and gas rigs representative to see how the Pit Viper Series Drilling System will enhance your profitability.

BUILT FOR PERFORMANCE
Designed for comfort

With a 110,000 lb (50 tonnes) bit load capacity, the Pit Viper 311 can add unsurpassed productivity to your mining operations. The heavy, durable, ergonomically designed Pit Viper 311 can drill a 65 ft (19.8 m) clean hole in a single-pass.

By utilizing a high proportion of proven technology from previous rigs in the Pit Viper series, the progress towards greater energy efficiency, safety and productivity continue. The hydraulic top-head drive rotary head that our customers have always preferred is retained, as well as the automatically tensioned hydraulic cable feed system, and the hydraulic powered break out tools. The elevated cabin is the same that’s used on the PV-351. The live tower is capable of single-pass drilling of a 65 ft (19.8 m) clean holes, with bit changing above deck. Single-pass drilling yields higher drilling efficiencies (up to 25% when drilling in soft material) by eliminating rod change time and allowing more time for drilling.

RCS AS STANDARD
Atlas Copco’s Rig Control System (RCS) comes standard on the PV-311. RCS provides a number of safety and interlock features, as well as provides a foundation to build in more technology options if desired in the future. There are optional RCS upgrade packages available including: AutoLevel, Auto-Drill, high precision GPS, and teleremote control.

A benefit of the RCS system is that new functionality/ options can be added later without major rebuilding of the machines. Visit www.rcspitviper.com for more information.

ATLAS COPCO PATENTED FEED SYSTEM
The PV-311 offers a dual-feed system with dual hydraulic feed cylinders that raise and lower the rotary head smoothly and positively by way of cables for both pulldown and pullback. In addition large diameter sheaves are designed to further increase cable life.

ROTARY DRILLING
The Pit Viper 311 is designed to handle 7 5⁄8” to 10 ¾” drill pipe. With low pressure, 110 psi (7.6 bar) can be used for rotary drilling of blastholes up to 12 ¼” in diameter. The standard diesel fuel tank has a capacity of 700 gallons (2,650 L) and provides sufficient fuel over 12 operating hours. In conjunction with the optional 1,400 gallons (5,300 L) fuel tank it will be possible to drill up to 24 hours before refueling. Alternative fuel/water tank combinations are available, as well as the optional fuel saving hydraulic clutch.

SERVICE AGREEMENTS
Atlas Copco provides several types of service agreements to meet operational requirements and to secure your productivity.

Variable price repairs – Service when you need it
Fixed price repairs – Service with controlled cost
Equipment Audit – Scheduled equipment quality control
Preventive Maintenance Programs – Peace of mind and focus on core business
OPERATOR COMFORT
The new PV-311 ergonomically designed cab compliments Atlas Copco’s state-of-the-art Rig Control System, offering you a platform for autonomy and operator safety. Designed and tested to the same Falling Object Protective Structure (FOPS) standards as dozers, the cab protects against falling objects. Built to withstand bitter cold and excessive heat, the new PV-311 cab design offers unmatched operator comfort. With improved pressurization, door sealing and the insulation of the new cab, outside drilling noise is minimal. Our new cab is climate controlled with a large A/C package, dedicated trainee seat with seatbelt, and plenty of room for storage. There are also options for a refrigerator, microwave, and a heated operator’s seat. Large cab windows and an excavator style chair sits on an elevated platform to increase visibility with the assistance of integrated lights, and a large back lit electrical cabinet enhances serviceability.

EXCELLENT SERVICEABILITY
The Pit Viper 311 is designed to be a maintenance friendly machine, with an optional 360-degree walk around access that allows for safe, easy movement with unsurpassed access to service points. Equipped with tower access and fall restraint system, emergency stops, accessible staircases and spacious enclosures for components, the PV-311 offers easy accessibility for service. The valve stand is centrally located above the deck for auxiliary hydraulic components and I/O modules, and air filters are located at the non-drill end of the rig. There’s an open access on both sides to service the air compressor and engine, as well as easy access to the hydraulic system. A consolidated filter rack is offered providing ease of access to all fluid filters on the machine.

STURDY, POWERFUL, EFFICIENT
To ensure long frame life without rebuilds, the design and testing process followed the concept used for the PV-351. The PV-311 tower offers a slide wrench similar to the 351, but with an improved deck bushing. An upgraded model of the DM-M3 rotary head has been installed with larger motors (13,800 lb-ft @140 RPM), a dedicated lubrication pump and improved rotary head guides. A hydraulic central grease system, auto-cable tensioning and a hands free breakout wrench come standard on the PV-311. The power system setup for the PV-311 includes a matched engines and compressors for rotary drilling. The power pack consists of a diesel engine (Tier IV available) that is directly coupled to an air compressor on one end and a five-hole hydraulic pump drive gear-box on the other end, with the option to add in the patent pending air compressor clutch. The complete power pack assembly is mounted on its own sub base and then isolation mounted to the rig’s main frame.
### PIT VIPER | SUB STRUCTURE

**LEVELING JACK SPECIFICATIONS**
- **Type**: Hydraulic cylinder
- **Number**: Four (two on the drill end, and two on the non-drill end of the rig)
- **Bore x Stroke x Rod Diameter**
  - **(2) Drill Side**: 8" x 72" x 4.5"
  - **(2) Non-Drill Side**: 8" x 72" x 4.5"
- **Approximate Lifting Capacity (each)**
  - **Drill Side**: 163,000 lbs (73,936 kg)
  - **Non-Drill Side**: 163,000 lbs (73,936 kg)
- **Jack Pad Area**
  - **(2) Drill Side**: 1165.5 in²
  - **(2) Non-Drill Side**: Round 40 in diameter
- **Approximate Jack Pad Bearing Pressure**
  - **Tower Up**: Drill End – 125 psi; Non Drill End – 50 psi
  - **Tower Down**: Drill End – 65 psi; Non Drill End – 76 psi
- **Position Indication**: Proximity Switches

**MAINFRAME SPECIFICATIONS**
- **W24" (0.61m) x 162 lb/ft (241kg/m) flange I-Beam construction**
- **Designed by Atlas Copco, and weld fabricated by certified welders**
- **Designed with the latest technology and verified by dynamic strain gauging**
- **Mainframe weldment weight is 30,300 lb (13,744 kg)**

**UNDERCARRIAGE AND PROPEL SYSTEM**
- **Make**: Atlas Copco 3500 custom u/c (2 speed)
- **Atlas Copco overall length**: 300 in (761.8 cm)
- **Atlas Copco ground contact**: 251 in (637.5 cm)
- **Hydraulic slack adjustment, spring recoil**: 4 u/12 lower
- **Propel Motors**: Two
  - **Type**: Hydraulic, axial piston, fixed displacement
  - **Rating**: 340 hp (254 kW)
- **Track Pads**: Atlas Copco Width
  - **Type**: Atlas Copco Ground Pressure
  - **Final Drive Ratio**: 345:1
- **Propel Speed Range**: BERCO, 2 Speed
  - **BERCO**: 0 – 0.93 mph
  - **BERCO**: 0 – 1.50 mph (107.4 kN)

### PIT VIPER | TOWER, CAROUSEL, AND DRILL ROD HANDLING

**TOWER**
- **Tower Construction**: Four main member, open front ASTM A500 rectangular steel tubing
- **Tower Raising Cylinders**: Two-hydraulic
  - **Bore**: 6.25 in (15.875 cm)
  - **Stroke**: 468.5 in (11.65 m)
- **Rotary Head Travel**: 76 ft (23.16 m)
- **PV-310 Physical Tower Length**: 94 ft 2 in (28.7 m)
- **Width**: 11 ft 10 in (360.7 cm)
- **Depth**: 10 ft 10.4 in (331.3 cm)
- **Assembly Weight**: 81,000 lb (36,740 kg)
- **Carousel**: Internal to the Tower
- **2 rod cups**

**DRILL RODS**
- **Rod size**: 35 ft (10.67 m)
- **Single pass depth of 65 feet (19.8 m) can be achieved with all rod sizes, and is accomplished by connecting two 35’ rods together.**

**ROTARY HEAD**
- **Horsepower**: 340hp (254kW)
- **Variable Speed**: 0 – 240 RPM
- **Torque**: Variable 0 – 13,250 lbf-ft (17,965 Nm) @ 0-100 RPM & 9,000 lbf-ft (12,220 Nm) @ 100-200 RPM
- **Number of Motors**: Two
- **Variable displacement axial piston**: Two stage spur gear (14.8)
- **6 in (127 mm)**
- **Nylatron material with 73.78" (187.4 cm) contact**

**FEED SYSTEM**
- **Weight on Bit**: Variable, 0 to 110,000 lb. (0 to 489 kN)
- **Quantity**: 2 Feed Cylinders
- **Double rod – Double Piston – Double Acting Cylinders Cylinder Bore**: 6.25 in (157.5 mm)
- **Type**: Double rod
  - **Rod Diameter**: 4.75 in (120.65 mm)
  - **Stroke**: 38 ft 2 in (11.64 m)
  - **Pulldown Cable Diameter**: 1/16 in (28.55 mm) diameter
  - **Pullback Sheave Diameter**: 35.5 in (901 mm)
  - **Number of pullback Sheaves**: Six
  - **Pullback Cable Diameter**: 34 in (9.05 mm) diameter
  - **Pullback Capacity**: 0 to 50,000 lbf. 0 to 222 kN
### PIT VIPER 311 SPECIFICATIONS

#### PIT VIPER | TOWER, CAROUSEL, AND DRILL ROD HANDLING (CONT.)

<table>
<thead>
<tr>
<th>Feed System (cont.)</th>
<th>U.S.</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed Speed</td>
<td>0 – 81 ft/min</td>
<td>25 m/min</td>
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<tr>
<td>Retract Speed</td>
<td>191 ft</td>
<td>58.2 m/min</td>
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#### PIT VIPER | POWER PACKAGE

<table>
<thead>
<tr>
<th>INGERSOLL RAND</th>
<th>2 X 285 mm 3000 cfm @ 110 psi</th>
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<tr>
<td>CAT</td>
<td>C32 (T2 or Ti)</td>
</tr>
<tr>
<td></td>
<td>1125 (839 kW) @ 1800 rpm</td>
</tr>
<tr>
<td>MTU</td>
<td>16V2000 (T2 or T4)</td>
</tr>
<tr>
<td></td>
<td>1300 (970 kW) @ 1800 rpm</td>
</tr>
<tr>
<td>Cummins</td>
<td>QSK38 (T2 only)</td>
</tr>
<tr>
<td></td>
<td>1260 (940 kW) @ 1800 rpm</td>
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<table>
<thead>
<tr>
<th>ATLAS COPCO TWIN S3</th>
<th>3000 cfm @ 110 psi</th>
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<tr>
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**COMMITTED TO SUSTAINABLE PRODUCTIVITY**

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