

# ***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)

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*Atlas Copco*

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# 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.

Visit [WWW.ATLASCOPCO](http://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.



## 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](http://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 3/4" drill pipe. With low pressure, 110 psi (7.6 bar) can be used for rotary drilling of blastholes up to 12 1/4" 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



Designed to meet the demands of today's expanding mining market with the proven systems, components and technology of the Pit Viper series.

## 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 lbf-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 choice of 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.

## + GENERAL FEATURES

### CAB

- Insulated & Pressurized
- Air Conditioning & Heated
- FOPS Certified
- Air Suspension Operator Ergonomic Operators Seat w/ Seatbelt
- Additional Buddy Seat w/ Seatbelt
- Windshield wipers with washers on three windows of the cab
- Cab dome light

### AIREND

- 3000 CFM @ 110 psi air compressor (84.9 m<sup>3</sup>/min @ 7.6 bar) (IR or Atlas Copco available)
- Electronic Air Regulation Control System

### ENGINES

- MTU 16V2000 diesel engine – (969kW) @ 1800 RPM
- Caterpillar C32 diesel engine – 1125 HP (839 kW) @ 1800 RPM
- Cummins QSK38 diesel engine – 1250 HP (932 kW) @ 1800 RPM
- Heavy duty engine silencer/muffler
- Separate air intake filters for engine and air compressor

### TRACKS

- Atlas Copco 3500 Custom Undercarriage

### LIGHTS

- Amber strobe light on cab
- Blue strobe light on tower
- 28 HID lights located around the rig

### TOWER

- Hydraulic cylinders driven cable feed system
- Hydraulic motor driven rotary head with maximum torque 13,250 lbf-ft (18.7 kNm) and speed range 0 – 140 RPM
- "No-bump" rod changer
- Hydraulically powered, hands-free breakout wrench with fork chuck
- PV-311 - Two rod carousel for 7-5/8" (177.8 mm) x 65' (19.81 m) up to 10 3/4" (273 mm) drill rod
- PV-316 - Five rod carousel for 7-5/8" (177.8 mm) x 65' (19.81 m) drill rod
- 8,000 lb (3628 kg) capacity auxiliary hoist
- Tower Infill (when horizontal) – with ladder access from deck

### FLUIDS/MAINTENANCE

- 700 U.S. gallon (2650 L) fuel tank
- Fast service system providing ground level, quick connect fittings for filling and evacuation of fuel, hydraulic oil, engine oil, engine coolant, compressor oil, automatic central lubrication grease, thread grease (if option installed) and water (if option installed).
- Live Sampling Available
- 13 emergency shutdown buttons
- Ground Level Battery & Starter Isolation Mechanical Disconnects

### MISCELLANEOUS

- Four 72" (1.83 m) stroke leveling jacks
- Cooling package (hydraulic/compressor oil cooler, engine radiator and engine charge air cooler) rated up to 125 degrees F (52 degrees C)
- Variable speed fan control
- Jump start hook-ups
- Two boarding ladders (fixed or hydraulic)
- Hydraulically retractable dust curtains
- Rig Control System (RCS)
- Hose tagging with part number and reference number on both fitted ends
- Attention horn
- Propel Alarm
- Full deck service catwalks and railings
- Wide flange structural steel I-beam frame with oscillation yoke
- Automatic central lube
- Activated light poles
- Magnetic drain plugs



# PIT VIPER 311 SPECIFICATIONS

## PIT VIPER | SUB STRUCTURE

	U.S.	METRIC
<b>LEVELING JACK SPECIFICATIONS</b>		
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)	163,000 lbs	73,936 kg
Jack Pad Area	(2) Drill Side: 1165.5 in (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	
<b>MAINFRAME SPECIFICATIONS</b>		
	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)	
<b>UNDERCARRIAGE AND PROPEL SYSTEM</b>		
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
Take-Up Adjustment	Hydraulic slack adjustment, spring recoil	
Rollers	4 upper/12 lower	
<b>Propel Motors</b>		
Number	Two	
Type	Hydraulic, axial piston, fixed displacement	
Rating	340 hp (254 kW)	
<b>Track Pads</b>		
Atlas Copco Width	29.5 in	75cm
Type:	Triple Bar Grouser - for increased grip and reduced ground pressure	
Atlas Copco Ground Pressure	24.1psi	166kPa
<b>Final Drive Ratio</b>		
Atlas Copco	345:1	
<b>Propel Speed Range</b>		
BERCO, 2 Speed	low: 0 – 0.93 mph 0 – 1.50 km/hr high: 0 – 1.48 mph 0 – 2.38 km/hr	

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

	U.S.	METRIC
<b>TOWER</b>		
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	458.5 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	
<b>DRILL RODS</b>		
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.	
<b>ROTARY HEAD</b>		
Horsepower	340hp	254kW
Speed	Variable 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	
Type of Motor	Variable displacement axial piston	
Reduction	Two-stage spur gear (14.8)	
Main Gear Face Width	5 in (127 mm)	
Head Guides	Nylatron material with 73.78" (187.4 cm) contact	
<b>FEED SYSTEM</b>		
Weight on Bit	Variable, 0 to 110,000 lb. (0 to 489 kN) Quantity: 2 Feed Cylinders	
Type	Double rod – Double Piston – Double Acting Cylinders Cylinder Bore: 6.25 in (157.5 mm)	
Rod Diameter	4.75 in	120.65 mm
Stroke	38 ft 2.5 in	11.64 m
Pulldown Cable Diameter	1-1/8 in (28.575 mm) diameter	
Pullback Sheave Diameter	35.5 in	901 mm
Number of pullback Sheaves	Six	
Pullback Cable Diameter	3/4 in (19.05 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.)

	U.S.	METRIC
<b>Feed System (cont.)</b>		
Feed Speed	0 – 81 ft/min	25 m/min
Retract Speed	191 ft	58.2 m/min

## PIT VIPER | POWER PACKAGE

<b>INGERSOLL RAND</b>		
2 X 285 mm 3000 cfm @ 110 psi		
CAT	C32 (T2 or Ti)	1125 (839 kW) @ 1800 rpm
MTU	16V2000 (T2 or T4)	1300 (970 kW) @ 1800 rpm
Cummins	QSK38 (T2 only)	1260 (940 kW) @ 1800 rpm
<b>ATLAS COPCO TWIN S3</b>		
3000 cfm @ 110 psi		
CAT	C32 (T2 or Ti)	1125 (839 kW) @ 1800 rpm
MTU	16V2000 (T2 or T4)	1300 (970 kW) @ 1800 rpm
Cummins	QSK38	1260 (940 kW) @ 1800 rpm

## COMMITTED TO SUSTAINABLE PRODUCTIVITY

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