

# Pit Viper 271 Blasthole Drills

Single-pass rotary and down-the-hole (DTH) drilling





# Proven productivity

The PV-271 is the drill that put the Pit Viper on the map. It operates in almost every surface mining application out there. Gold, copper, coal, iron ore, phosphate, silver — you name it. The PV-271 has probably drilled it.

When it comes to drilling single-pass holes up to 59 ft (18 m) with diameters up to 10-5/8 in (270 mm), the PV-271 has proven itself time and time again. With a 75,000 lb (34 tonnes) bit load capacity, the PV-271 can bring unsurpassed performance to your operation.

If technology, productivity and long asset life with the lowest total cost of ownership are on your list of priorities, look no further than the Pit Viper series. Equipped with a standard Rig Control System (RCS) operating platform, the PV-271 sets the bar for efficiency.

## ⊕ Key benefits

### Highly efficient drilling

The PV-271 is one of the most productive drills available for rotary tricone and down-the-hole drilling of 6-3/4 in to 10-5/8 in (171 mm to 270 mm) diameter holes. The durable PV-271 can drill a 55 ft (16.8 m) clean hole in a single pass with the drill bit above the table. A 59 ft (18 m) option is also available. Single-pass drilling can improve drilling efficiency by up to 25% when drilling in soft material by eliminating rod change time and allowing more time for drilling. Eliminating rod changes also reduces the risk for operational errors.

### Smooth operation with long life

The rig utilizes Epiroc's patented cable feed system with automatic cable tensioning for improved cable life, easier wear detection and smoother drilling. This design helps to increase the life of the bit and the drill string.

### Tailor-made for your application

The PV-271 offers more than 100 different options to configure the perfect drill rig for your specific application.

For details on how the Pit Viper series can enhance your profitability contact your Epiroc representative or visit [epiroc.com](http://epiroc.com).





# Designed for maximum productivity and value



### + Operator comfort

The PV-271 features an insulated, pressurized cab with an air-ride operator seat — providing high suspension comfort with excellent visibility. The large cab is equipped with Rig Control System (RCS) controls, providing onboard automation capabilities as part of the standard drill package for added safety and productivity.



### + Ease of maintenance

The deck layout on the Pit Viper series offers easy access to all major service components. Ground-level, fast fuel fill connections are standard, and optional ground-level live sampling is available. Spool valves are also centrally located above the deck for accessibility.



### + Enhanced safety

The PV-271 is equipped with a number of features to help keep operators safe on the job. Features include a FOPS cab with double safety glass, as well as safety interlocks through the RCS system and safety shutdowns for temperature, low level, and pressure. Other features include spring-applied, hydraulic-released brakes on the tramming system, and optional ground-level battery/tram/starter isolation.



## Service and support

Epiroc offers several types of service agreements to meet your operational requirements and maximize your productivity:

- Variable-price repairs**  
Service when you need it.
- Fixed-price repairs**  
Service with controlled costs.
- Equipment audit**  
Scheduled equipment quality control.
- Preventive maintenance programs**  
Peace of mind so you can focus on your core business.

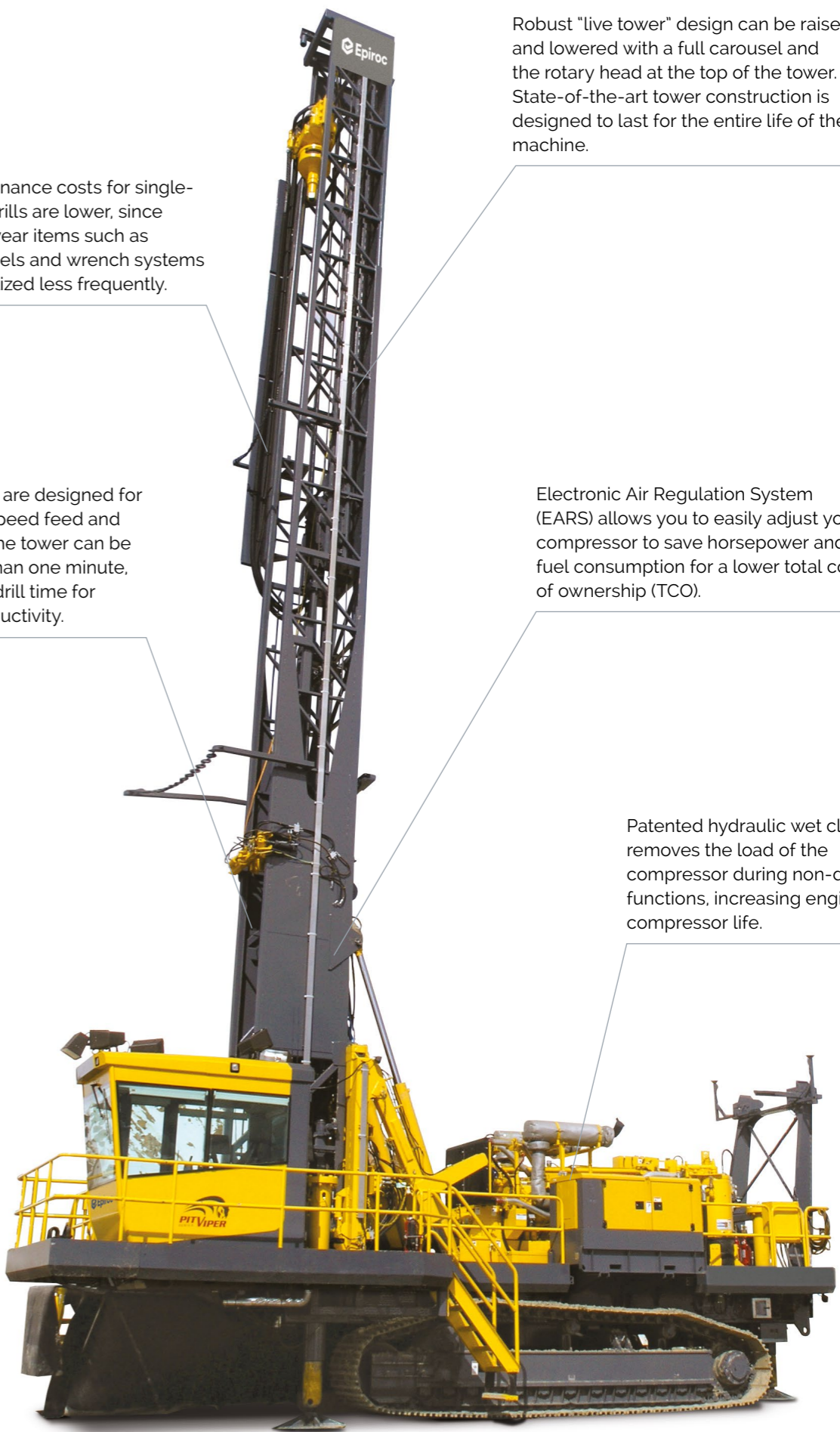
Maintenance costs for single-pass drills are lower, since high-wear items such as carousels and wrench systems are utilized less frequently.

Feed cylinders are designed for optimal high-speed feed and retract rates. The tower can be raised in less than one minute, reducing non-drill time for increased productivity.

Robust "live tower" design can be raised and lowered with a full carousel and the rotary head at the top of the tower. State-of-the-art tower construction is designed to last for the entire life of the machine.

Electronic Air Regulation System (EARS) allows you to easily adjust your compressor to save horsepower and fuel consumption for a lower total cost of ownership (TCO).

Patented hydraulic wet clutch removes the load of the compressor during non-drilling functions, increasing engine and compressor life.



# Flexibility for the future



Epiroc's Rig Control System (RCS) is based on proven CAN-bus technology and comes standard on the PV-271. RCS provides a number of safety and interlock features, as well as a foundation to add new functionality/options later without a major rebuild of the machine. With RCS, you can run your PV-271 with an operator on board using options such as Autodrive and Autolevel — or you can run with the operator off the drill with the optional BenchREMOTE package, allowing one operator to run one or multiple units. You can even implement autonomous drilling with almost no human interaction with the drill.

## Add-on features:

### Autodrive

Executes fast, safe and efficient drilling processes in a consistent way.

### Autolevel

Closes the gap between less experienced and expert operators.

### Wireless remote tramming

Allows the operator to tram a Pit Viper from the bench within a 32.8 – 65.6 ft (10 – 20 m) distance.

### Teleremote

Allows safe, productive and effective single- or multi-drill remote operations (control room and drill solutions sold separately).

### High-precision GPS hole navigation system

Imports drill plans to RCS and ensures that each blasthole is precisely positioned with accuracies of up to ±3.9 in (±10 cm), depending on installation and the number of satellites.

### Office pack

Includes:

- **Common Communications Interface (CCI)**  
Allows data transfer to and from the RCS system.
- **Surface Manager**  
Provides production reporting.
- **Rig Remote Access (RRA)**  
Wirelessly sends files to and from the drill rigs.
- **Desktop Viewer**  
Allows remote access to the drill's operational screens.

## Technical specifications

### Substructure

#### Mainframe 162 lb/ft (241 kg/m)

- Weld fabricated I-beam type using wide flange structural steel for both rails and crossbeams
- Designed by Epiroc, and weld fabricated by certified welders
- Designed with the latest FEA technology and verified by dynamic strain gauging

#### Leveling jack

Type	Hydraulic cylinder
Quantity	Four jacks
Calculated jack pad bearing pressure	Drill end: 68.9 psi (475 kPa) Non-drill end: 66.7 psi (460 kPa)
Position indication	"Jack up" indicator lights on console or RCS screen

#### Capacities

Fuel tank	350 gal (1,325 L); optional 612 gal (2,317 L)
Water tank (diesel)	400 gal (1,514 L) or 662 gal (2,506 L)
Water tank (electric)	350 gal (1,325 L), 400 gal (1,514 L), 662 gal (2,506 L) or 750 gal (2,839 L)
Optional additional water tank	422 gal (1,597 L)
Hydraulic tank	150 gal (568 L)

#### Undercarriage and propel system

Make	Epiroc 3400 EXTENDED or Caterpillar 345XL
Mounting	Oscillating walking beam: 5" each side, total 10"
Total length	Epiroc 3400: 21 ft 4.6 in (6.52 m), Caterpillar 345XL: 21 ft 3 in (6.48 m)
Ground contact	Epiroc 3400: 18 ft 1 in (5.51 m), Caterpillar 345XL: 17 ft 11 in (5.46 m)
Take-up adjustment	Grease slack adjustment; spring recoil
Rollers	13 lower / 3 upper
Location	Equally spaced between idler and sprocket
Roller bearings	Sealed for life
Track pads	Type: Triple bar grouser — for increased grip and reduced ground pressure Width: 34.5 in (900 mm) Ground pressure: 13 psi (89.6 kPa)
Drive	Hydrostatic closed loop through speed reducer to drive sprockets
Propel motors	Two - Hydraulic, axial piston, rating (each): 170 HP (126.8 kW)
Propel speed range	Epiroc: 0 – 1.0 mph (0 – 1.6 km/h), Caterpillar: 0 – 1.1 mph (0 – 1.8 km/h)





## Technical specifications

### Tower, carousel and drill rod handling

Tower		
Tower construction	Four main member, open front ASTM A500 Grade B rectangular tubing; cold sawed and welded	
Tower raising	Two hydraulic cylinders; live tower (raise and lower with full carousel and rotary head at top of tower)	
Rod support	Hydraulic cylinder clamping and actuation to center drill rod	
Rated capacity		
Single pass depth	55 ft (16.8 m), optional 59 ft (18 m)	
	The 59 ft tower is slightly longer than the standard 55 ft tower and uses an Extended Feed System that allows a larger travel length of the rotary head; with the drill bit carried above the table.	
Maximum hole depth	Standard 55 ft tower: 105 ft (32 m), optional 59 ft tower: 109 ft (33.2 m)	
Carousel (carousel internal to the tower with key-lock retention)		
Rod length	25 ft (7.6 m)	
Capacity	Two pieces	
Actuation	Two hydraulic cylinders	
Safety	<ul style="list-style-type: none"> <li>• Drill pipe is held securely in carousel by "key lock design" mechanism</li> <li>• No bump system to prevent damage if carousel not stowed</li> </ul>	
Drill rods		
Drill pipe diameter x 25 ft (7.6 m)	Thread	Suggested bit diameter
5-1/2 in (140 mm)	3-1/2 in BECO	6-3/4 in – 9 in (171 mm – 229 mm)
6-1/4 in (159 mm)	4 in BECO	6-3/4 in – 9 in (171 mm – 229 mm)
7 in (178 mm)	4-1/2 in BECO	9-7/8 in – 10-5/8 in (251 mm – 270 mm)
7-5/8 in (194 mm)	5-1/4 in BECO	9 in – 9-7/8 in (229 mm – 251 mm)
8 in (203 mm)	5-1/4 in BECO	9-7/8 in – 10-5/8 in (251 mm – 270 mm)
8-5/8 in (219 mm)	6 in BECO	10-5/8 in (270 mm)
Rotary head		
Speed range	Variable 0 – 150 RPM	
Torque	Variable 0 – 8,700 lbf-ft (0 – 11,796 Nm)	
Number of motors	Two	
Type of motor	Variable displacement axial piston	
Reduction	Two-stage spur gear (15.227:1)	
Horsepower	181 HP (135 kW) at 100% efficiency	
Travel length	Standard: 55 ft tower: 64.48 ft (19.65 m), optional 59 ft tower: 66.48 ft (20.26 m)	
Feed system		
Pulldown capacity	Up to 70,000 lbf (0 – 311 kN)	
Pullback capacity	0 – 35,000 lbf (0 – 156 kN)	
Weight on bit	Variable, 0 – 75,000 lb (0 – 34,019 kg)	
Mechanism type	Two dual rod, dual piston hydraulic cylinders (patented design)	
Number of cables - diameter	Two pulldown, two pullback – 1 in (25.4 m)	
Number of sheaves - outside diameter	Eight – 23.5 in (597 mm)	
Automatic tensioning	Hydraulic motor driven jackscrews for pulldown cables; hydraulic cylinders for pullback cables (patented design)	
Feed speed	126.7 ft/min (38.4 m/min)	
Retract speed	158.1 ft/min (48.2 m/min)	

## Technical specifications

### Cab and controls

Cab	
<ul style="list-style-type: none"> <li>• Quiet, single piece design with no seams or leaks (tested @ less than 80 dBA)</li> <li>• Insulated, pressurized with heater and under cab mounted air conditioning</li> <li>• Falling Object Protective Structure (FOPS) certified</li> <li>• Ergonomically designed control system and excellent visibility (with unobstructed view to drill table)</li> </ul>	
Controls (Standard Rig Control System – RCS)	
RCS Control	<p><b>Integrated control touchscreen</b> (penetration rate, rotation torque, rotation pressure, pulldown force, pulldown pressure, hole depth indicator, etc.)</p> <p><b>Two joy sticks</b> (attached to the operator's seat) and push buttons on the operator panel controls (propel and leveling jack, pulldown feed control, holdback feed control)</p> <p><b>Standard interlocks/features</b></p>
Hydraulic system	
<ul style="list-style-type: none"> <li>• Three hydraulic pumps mounted on a single three hole pump drive gear box driven off the engine (optional electric motor) through a drive shaft</li> <li>• Two main pumps - drilling functions (drill feed and rotation) or tram functions (propel)</li> <li>• One auxiliary circuits triple pump - fans and other auxiliary functions</li> </ul>	
Power package	
Airend	
	1,900 cfm @ 110 psi (53.8 m <sup>3</sup> /min @ 7.6 bar) 2,600 cfm @ 110 psi (73.6 m <sup>3</sup> /min @ 7.6 bar) 1,530 cfm @ 350 psi (43.3 m <sup>3</sup> /min @ 24 bar) 1,450 cfm @ 350 psi (41.1 m <sup>3</sup> /min @ 24 bar)
Electronic Air Regulation System (EARS)	
<ul style="list-style-type: none"> <li>• Standard on the PV-271</li> <li>• Deliver variable air volume control (within system capacity), while still maintaining constant air pressure</li> <li>• Optimal fuel efficiency while hole collaring</li> <li>• Reduced wear on drill string components</li> </ul>	
Diesel engine / electric motor (1,800 rpm or 2,100 rpm)	
Diesel engine – non Tier 4	CAT C27 T2 – 875 HP (652 kW) CAT C32 T2 – 950 HP (708 kW) CUMMINS QSK23 T2 – 860 HP (641 kW)
Diesel engine – Tier 4	CAT C27 T4F – 875 HP (652 kW) CAT C32 T4F – 950 HP (708 kW) QSK23 T4F – 860HP (641kW)

\*Airend output differs between 50 Hz and 60 Hz operations.

# Technical specifications

## Shipping dimensions and weight (standard machine)

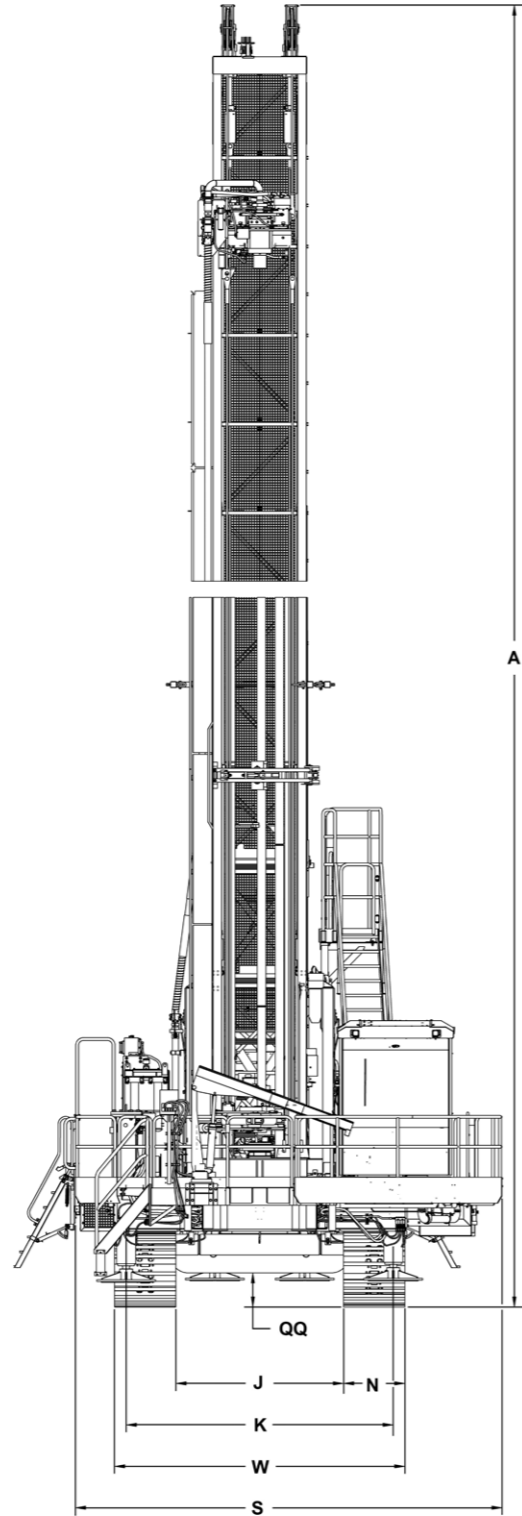
Tower	
Length	85 ft (25.91 m)
Width	7 ft 4 in (2.23 m)
Height	8 ft (2.44 m)
Gross weight	46,000 lb (20.9 tonnes)

Main frame (stripped)	
Length	40 ft (12.19 m)
Width	17 ft (5.18 m)
Height	15 ft (4.57 m)
Gross weight	135,000 lb (61.2 tonnes)

Operating weight	
Estimated weight	170,000 – 210,000 lb (77 – 95 tonnes)

**Operating dimensions** (Dimensions for PV-271 diesel with Caterpillar tracks; dimensions may vary by machine and options)

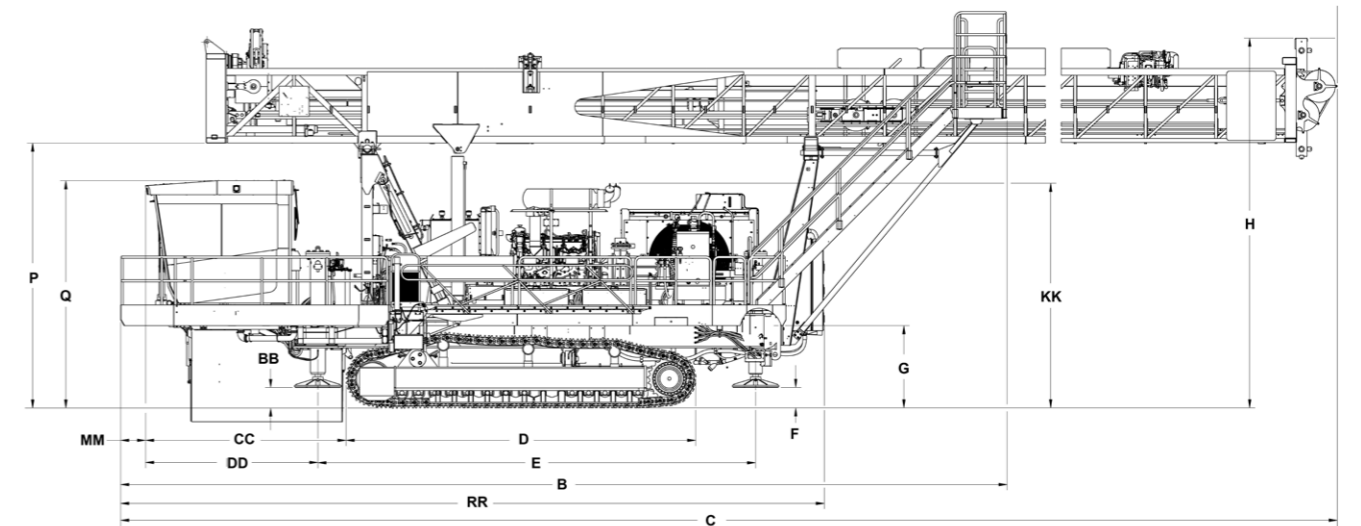
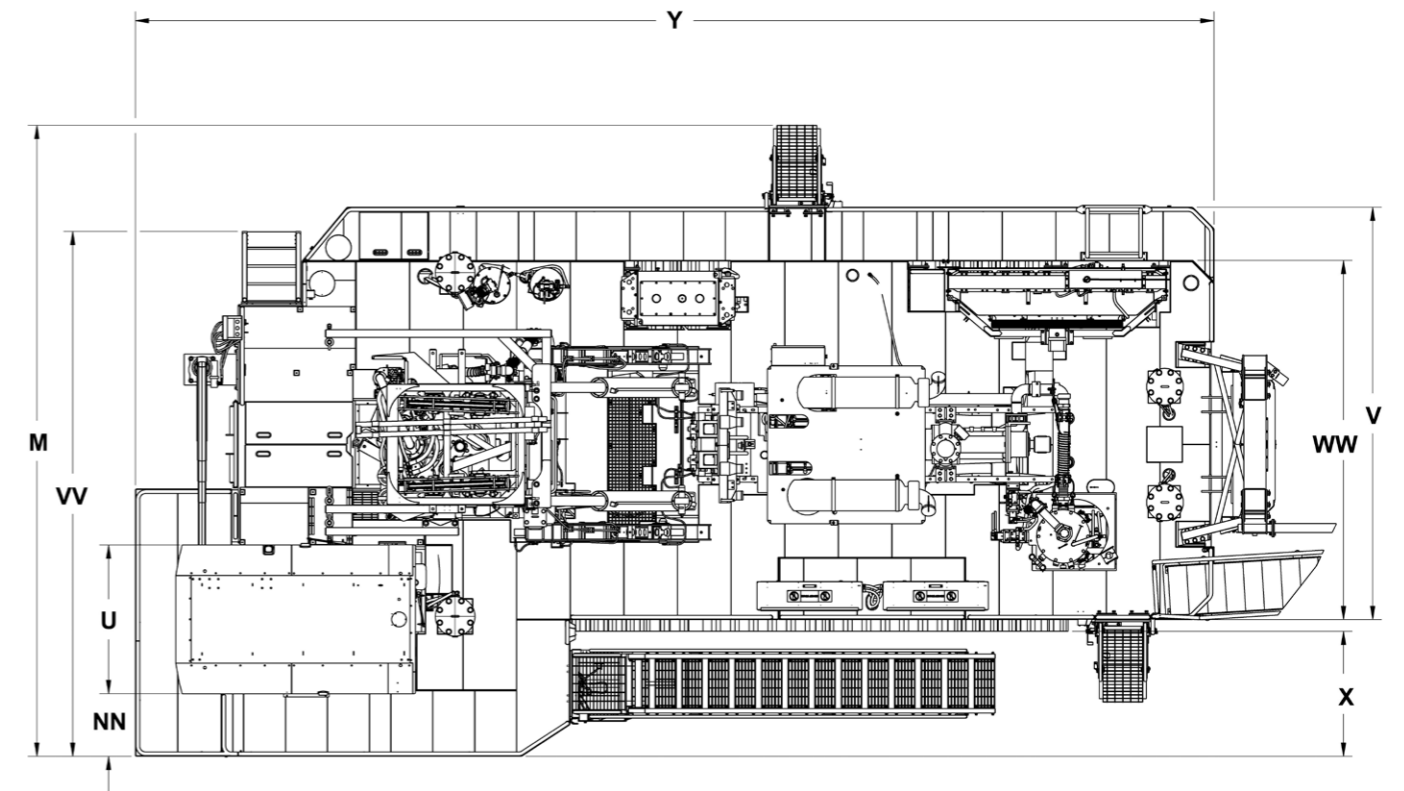
	Description	Dimensions ft (m)
A	Height – tower up, PV-271 (55 ft tower) Height – tower up, PV-271 (59 ft tower)	88' 8" (27.06) 90' 3" (27.52)
B	Length – tower up	53' 8" (16.39)
C	Length – tower down, PV-271 (55 ft tower) Length – tower down, PV-271 (59 ft tower)	88' (26.82) 89' 5" (27.27)
D	Length – undercarriage	21' 3" (6.49)
E	Length – jack center to jack center	26' 6" (7.92)
F	Height – jack to ground non drill end	1' 2" (0.36)
G	Height – decking to ground	4' 9" (1.49)
H	Height – tower down, non drill end	22' 4" (6.82)
J	Width – track inside to track inside	8' 1" (2.46)
K	Width – jack center to jack center	12' 9" (3.93)
M	Width – overall	24' 2" (7.37)
N	Width – track	2' 3" (0.70)
P	Height – tower off	16' (4.87)
Q	Height – ground to cab top	13' 8" (4.20)
S	Width – drill end, less dust collector	20' 6" (6.27)
U	Cab width	5' 7" (1.73)
V	Width – decking extended	15' 4.5" (4.70)
W	Width – undercarriage assembly	14' (4.24)
X	Width – decking cab end to undercarriage edge	4' 5" (1.37)
Y	Length – decking	40' 4" (12.31)
BB	Height – jack to ground drill end	1' 2" (0.36)
CC	Length – cabin to undercarriage edge, front view	12' 1" (3.68)
DD	Length – cabin to jack center, front view	10' 5" (3.20)
KK	Height – ground to engine exhaust	13' 8" (4.20)
MM	Length – decking edge to cab edge	1' 5" (0.45)
NN	Width – decking edge to cab edge top view	2' 3" (0.70)
QQ	Height – ground to oscillation yoke bottom	1' 6" (0.48)
RR	Length – decking cab end to water tank edge	42' 7" (13.0)
VV	Width – Decking edge to ladder	19' 7" (6.0)
WW	Width – decking, standard	13' 4.5" (4.20)



\*Approximate shipping dimensions for crated PV-271 with 55 ft tower (actual dimensions will vary based on rig configuration).

\*\*Fall off will vary greatly by machine and options.

# Technical specifications



## Optional equipment

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**Following are some examples of available options. For a comprehensive list, please contact your local Epiroc Customer Center.**

- Hydraulically operated automatic wet clutch between airend and engine
- Wrap-around decking for 360° access around cab
- Cold-weather options for drill operation in extremely cold ambient conditions (-45° C)
- Automatic thread lubrication
- Hydraulic retractable stair
- Water injection system
- 59 ft clean hole tower
- Angle drilling package
- Fast service options
- Video camera
- Dust collector

### **Electric Rig Only**

- Cable reel

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Inspired by innovation.**

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