



P&H[®] 320XPC

Electric Rotary Blasthole Drill

*Smart, Tough and Optimized
for Reliable, Productive Drilling*



320XPC Rotary Blasthole Drill

*Rugged, Smart and Maintenance-Friendly
for High Availability and Productivity*



P&H Mining Equipment Inc. offers the heavy-duty 320XPC blasthole drill for the toughest hard-rock and high production mining operations in the world.

Optimized layout and component location, powerful drive and motor capabilities, and superior mechanical design are just some of the productivity and safety features you'll find in the P&H 320XPC. Combined with a full array of Life Cycle Support available from your nearby P&H MinePro Services support team, the result is exceptionally high 320XPC availability.

As with all P&H electric shovel and dragline models, the 320XPC runs on the innovative and forward-thinking P&H Centurion® electrical control system. This system provides the controls to monitor and optimize drill rotary and pulldown force. In addition, Centurion-enabled health monitoring tools and performance enhancements are available as part of this advanced control system, resulting in streamlined productivity and maintenance for your blasthole drill.





Powerful, Rugged Drills

For mines looking to meet their drilling and blasting needs at the lowest cost per meter drilled, the 320XPC's powerful and reliable systems make it the best choice.

Powerful Pulldown

For positive bit loading, the 320XPC features electric top-drive rack-and-pinion pulldown, which contributes to better availability of the machine due to fewer wearing components requiring maintenance. With 68,040 kgs (150,000 lbs) of bit loading and 34,040 Nm (25,000 ft-lbs) of torque, the 320XPC has the power to break through the toughest rock conditions in the world.

Rugged Masts

The drill mast is a structure subjected to high loads. The 320XPC mast was designed using finite element analysis to achieve high cycle fatigue resistance and less downtime and costs repairing cracks. Constructed of common high strength alloy steel, the mast provides maximum rotary carriage and drill string support.

Superior Propel

Built for maximum strength, 320XPC mainframes and crawler frames stand up to hard-rock mine conditions. Rugged crawlers and powerful hydrostatic propel drives deliver maneuverability, gradability and fast set-ups.

Ample Air

A range of reliable, mining duty compressors are available to meet the specific bailing air needs for your mine. The 320XPC utilizes reverse helix screw compressors that provide years of reliable service.

Operator Comfort & Safety

The 320XPC is designed to provide operators with a safe, comfortable, and productive working environment. The drill operator's cab represents the latest in ergonomic and safety improvements.

Superior Visibility

The operator is provided with a clear, unobstructed view of the drilling area and the areas surrounding the drill. Expansive windows and video cameras ensure that the operator is able to maintain complete situational awareness while drilling and propelling. The operator's chair can swivel to face the direction of travel during propelling for safer repositioning.

Safe Environment

A FOPS Level II certified structure, combined with shatter resistant glass protects the operator from the harsh mining conditions. The seat rests on an adjustable, air suspension and the cab rests on viscous mounts to isolate the operator from vibrations common to drilling. The 320XPC also comes standard with an Arc Flash Mitigation system to protect both the operator and maintenance personnel.

Productive Environment

Controls are located within easy reach of the operator to allow for maximum productivity.





High Availability Made Easy

Easy Access

The 320XPC has an efficient deck layout that provides wide exterior and interior walkways for maintenance. With a large rear deck, operators have ample room to quickly and safely change bits and pipe.

Advanced Diagnostics

The 320XPC is controlled by P&H's proven Centurion control system that utilizes intelligent sensors and I/O devices to monitor and control hundreds of points on the drill. This allows faults to be quickly identified and isolated to maintain the high availability for which P&H drills are known.

Remote Health Monitoring

P&H's PreVail® remote health monitoring system is a powerful tool available on P&H drills. PreVail combines advanced information management and wireless communication technology to enable mine management and the P&H MinePro support network to optimize drill process efficiency for lower cost operation and increased return on your P&H drill investment.



Ready for the Toughest Conditions

The 320XPC provides reliable performance drilling holes through the toughest rocks no matter where the mine is located.

Artic Conditions

P&H drills operate reliably in some of the coldest environments on the planet. The drill is equipped with the necessary heaters and insulation to protect the operator and drill from temperatures that may reach -30°C (-25°F).

High Altitude

P&H can provide a reliable drilling platform that has the power and air capacity to maximize productivity at altitudes over 4250 m (14,000 ft).

Weak Power Grids

P&H's electric 320XPC have a soft start transformer available that limits the impact of starting the drill on weak power grids by reducing the initial inrush current by over 75%. This can reduce the overall power infrastructure costs for a mine and increase the life of the main motor and compressor.

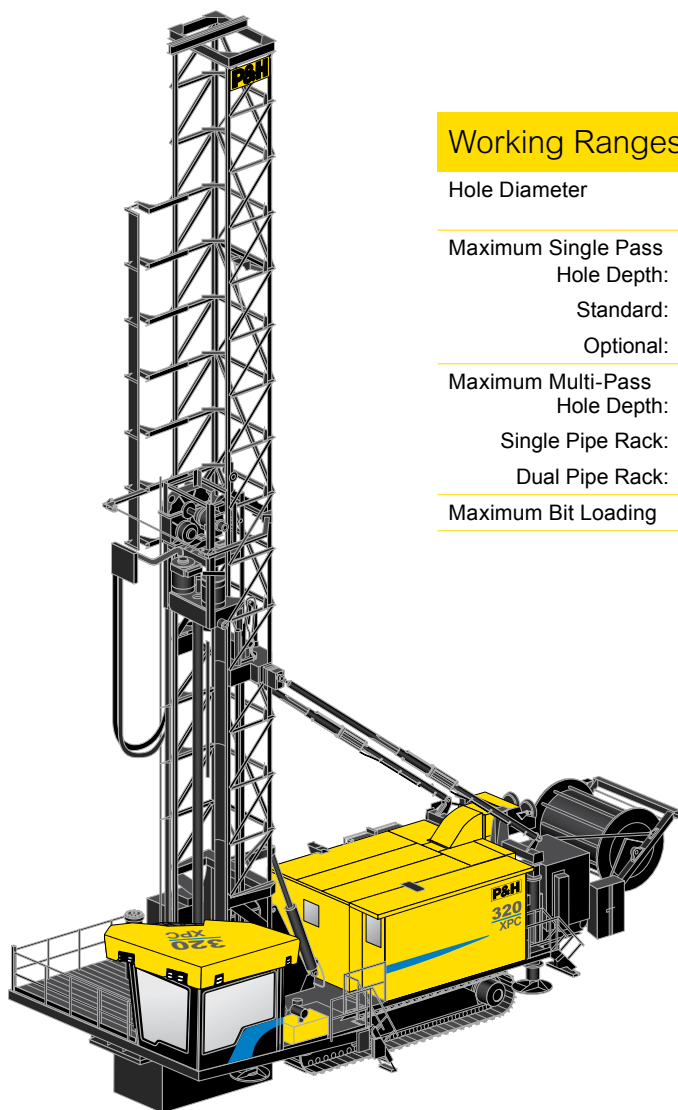


A reliable P&H AC Main Motor is housed within the 320XPC's spacious machinery house.



320XPC Rotary Blasthole Drill

Specifications



Working Ranges

Hole Diameter	270 mm to 444 mm	10 5/8 in. to 17 1/2 in.
Maximum Single Pass Hole Depth:		
Standard:	19.8 m	65 ft.
Optional:	21.3 m	70 ft.
Maximum Multi-Pass Hole Depth:		
Single Pipe Rack:	39.6 m	130 ft.
Dual Pipe Rack:	59.4 m	195 ft.
Maximum Bit Loading	68,038 kg	150,000 lbs.



Mast

Construction	Lattice type using alloy steel structural shapes		
Mast	Standard:	19.81 m	65 ft.
	Optional:	21.3 m	70 ft.
Raising and Lowering	Two hydraulic cylinders		
	Standard diameter:	267 mm	10.5 in.



Hoist/Pulldown

Design	DC electric motor driven chainless rack and pinion design		
Bit Loading (maximum)		68,038 kg	150,000 lbs.
Drill Feed	To	4.9 m/min	16 ft/min
Hoist	To	37.0 m/min	105 ft/min



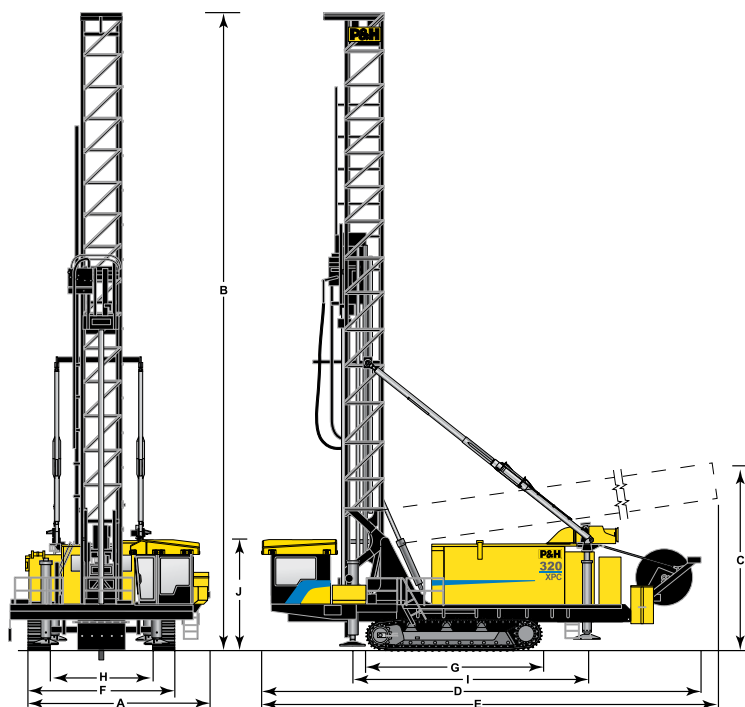
Rotary Machinery

Design	Dual DC P&H electric motors, independent ABB DCS-800 drives control (Master/Follower drive topology), can be run as single rotary motor during service/repairs
Rotation Speed	0-119 RPM
Maximum Torque	Up to 33,895 Nm (25,000 ft.-lbs.) for standard gear ratio



Pipe Handling

Type	Parallelogram style pipe rack, one rack is standard		
Pipe Size	Diameter:	235 mm - 346 mm	9.25 in. - 13.625 in.
Options	Additional pipe rack, up to two total		
Auxiliary Equipment	Standard deck wrench		
Auxiliary Winch	Capacity:	8164 kg	18,000 lbs.
Breakout Wrench	P&H SureWrench™		



Electrical Control

- P&H Centurion® Supervisory Controller provides direct integrated communication with motor drives giving precise motor control. Real-time multi-tasking capability allows for optimal machine logic sequencing, monitoring and control.
- Centurion I/O System uses 'Profibus' communication protocol for seamless integration of all drill subsystems and future expandability. Low-voltage 24V DC I/O drop points feature open and short circuit detection for improved diagnostics and troubleshooting.
- Centurion Information System's enhanced Graphical User Interface (GUI) features intuitive, icon-based screens to display vital information such as drill status, troubleshooting information, and production drill monitoring data.

Lighting

Standard: Quartz Halogen floodlights atop machinery house and drill deck areas, two stage halogen floodlights (7) above crawlers (100 w idle, 350 w in propel or maintenance), incandescent lights (4) outside machinery and operator's cab doors, fluorescent lights inside operator's cab and machinery house with internal emergency battery for back-up.

Optional:

- High Pressure Sodium, Metal Halide, LED

Operator's Cab

Type	Rear mounted with vibration and noise suppression
Noise	< 80 dB while drilling
Controls	PLC controlled, backlit for night operation
Glazing	Shatter-resistant, laminated glass on all sides, roof window with guard
Climate Control	Mine Air Systems or Bergstrom® HVAC unit available, providing pressurization and filtration

Overall Dimensions

A	Width, overall	8.3 m	27 ft. 1 in.
B	Height, mast up	30.6 m	100 ft. 6 in.
C	Height, mast down	10.2 m	33 ft. 6 in.
D	Length, mast up	17.7 m	58 ft.
E	Length, mast down	31.2 m	102 ft. 4 in.
F	Overall width of crawlers	6.1 m	20 ft.
G	Overall length of crawlers	7.3 m	24 ft.
H	Width of jacks	4.6 m	15 ft. 2 in.
I	Length between jacks	10.3 m	33 ft. 7 in.
J	Height to top of op. cab	4.5 m	14 ft. 6 in.

Weights - Approximate

Operating Weight (maximum)	181,437 kg	400,000 lbs.
Shipping Weight with Mast	153,949 kg	339,400 lbs.
Ground Bearing Pressure for Track Pads		
914mm (36 in.) shoes	200 kPa	29.0 psi
117 mm (44 in.) shoes	156 kPa	22.6 psi
Ground Bearing Pressure for Jacks		
standard size	890 kPa	129 psi
optional size	317 kPa	46 psi

Leveling Jacks

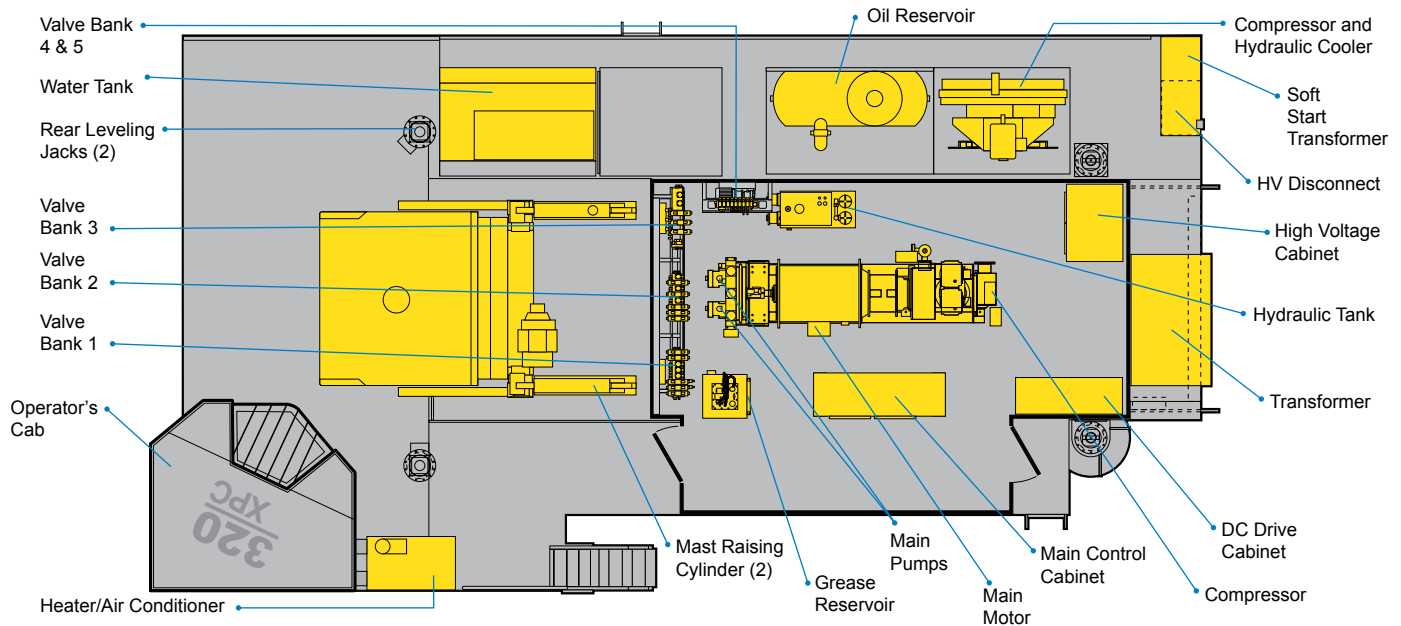
Cylinders	Four (4) 254 mm (10 in.) diameter x 1,676 mm (66 in.) stroke		
Jack Pads		Ground Pressure	
Standard:	Diameter: 762 mm (30 in.)	840 kPa	129 psi
Optional:	Diameter: 1,270 mm (50 in.)	317 kPa	46 psi
Auto Level	Standard feature		

Propel

Crawler Type	Heavy-duty lug and tumbler drive system, P&H design				
Shoe Width	Standard:	914 mm			36 in.
	Optional:	117 mm			44 in.
Propel Machinery	Dual hydrostatic planetary drive with spring set, hydraulic release brake, 231 kW (310 hp)				
Propel Speed (maximum)	High:	60 Hz:	1.61 kph	1.0 mph	
		50 Hz:	1.61 kph	.8 mph	
	Low:	60 Hz:	.97 kph	.6 mph	
		50 Hz:	.80 kph	.5 mph	
Maximum Grade	20%				
Take-Up Adjustment	Jack and shim				



Machinery Deck Plan



Air System

Compressor

Gardner-Denver SSY Series oil-flooded screw type

Available Volumes	Standard:	97 m³/min	3,450 cfm*
-------------------	-----------	-----------	------------

Sullair oil-flooded screw type

Available Volumes	Optional:	109 m³/min	3,850 cfm*
requires 746 kW / 1000 hp main motor			

Operating Pressure	448 kPa	65 psi
--------------------	---------	--------

Air Filters	Dual Donaldson 2-stage, dry type (Gardner Denver)
	Three Donaldson 2-stage, dry type (Sullair)

*Nominal air volume. Actual values may vary according to application.



Electrical System

Incoming Power	60Hz	4160V / 7200V 3-Phase
Supply Voltage	50Hz	3300V, 5500V, 6000V, 6600V or 7200V 3-Phase

Recommended Supply Transformer	Minimum 1.5MVA Continuous, 6MVA Minimum Short Circuit at drill
--------------------------------	--

High Voltage Switchgear	External disconnect at trail cable junction box, high voltage load break disconnect and high voltage vacuum contactor for main drive motor and drives
-------------------------	---

Main Drive Motor	Standard:	522 kW	700 hp
	Optional:	746 kW	1,000 hp

VFD Compressor Oil Cooler Fan:	22.4 kW	30 hp
--------------------------------	---------	-------

Machinery House Fans:	2 x	5.6 kW	7.5 hp
-----------------------	-----	--------	--------

Hoist Blower Motor:	.75 kW	1.0 hp
---------------------	--------	--------

Auxiliary Hydraulic Pump:	1.1 kW	1.5 hp
---------------------------	--------	--------

Compressor Oil Circulation Pump:	14.9 kW	20 hp
----------------------------------	---------	-------

Cable Reel Hydraulic Pump Motor:	3.7 kW	5 hp
----------------------------------	--------	------

Water Injection Pump Motor:	.75 kW	1.0 hp
-----------------------------	--------	--------



Hydraulic System

Main System	Closed loop design utilizing dual variable-displacement piston pumps for propel, rotary, and pulldown
-------------	---

Auxiliary System	Open loop design utilizing vane pumps for mast raising, machine leveling, and pipe handling
------------------	---

Control Valves	Manifold mounted electro-hydraulic, PLC controlled - Discrete 24VDC Solenoid
----------------	--

Hydraulic Lines	Extensive use of high pressure steel tubing
-----------------	---

Filtration	3-micron return filters, 5-micron high pressure filters, 3-micron charge filters, suction strainers
------------	---



Optional Equipment

- 100A Welding outlet
- 600V / 100A Auxiliary outlet(s)
- Auxiliary Compressor
- Bit Lubrication
- Cable Reel (as shown in document drawings)
- Cable Reel Lowering System
- Cold Weather Package
- Deck Bushing (sleeve or roller type)
- Deck Mounted Jib Crane
- Fire Suppression
- Hydraulic Rear Dust Curtain
- Modular®, Stratalogger® and Terrain Interface Package
- PreVail® Remote Health Monitoring
- Remote Propel Control
- Shock Sub Adaptor
- Soft Start Transformer
- Stand Alone Welder
- Tow Package
- Wiggins 'Fastfil' System

*Bergstrom, Modular, Stratalogger and Terrain are not registered trademarks of Joy Global Inc. or any of its affiliates.



World Class Support from P&H MinePro Services

P&H equipment is made to handle some of the world's most demanding material moving challenges.

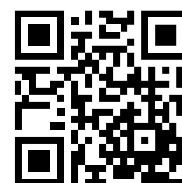
P&H MinePro Services can help your equipment meet those challenges at peak levels of efficiency, reliability and availability.

From machine assembly focused on the highest quality and safety standards, to world class maintenance, repair and parts support, MinePro is your partner for the life of your equipment.

We strive to help you obtain optimal productivity from your machine by offering a wide range of products and support including:

- Reliability Centered Maintenance Support
- Life Cycle Management Programs
- Genuine OEM Parts
- Equipment Inspections
- Maintenance and Repair
- Component Rebuilds and Exchanges
- Operator and Maintenance Training
- Remote Health Monitoring

No one understands your needs better than P&H MinePro Services. In fact, most of the improvements in P&H drills came from mining professionals like you, and our over 1,600 MinePro support specialists in the field. Call us today.



www.phmining.com
www.minepro.com

All designs, specifications and components of the equipment described above are subject to change at the manufacturer's sole discretion at any time without advance notice. Data and descriptions published herein are informational in nature and shall not be construed to warrant the service or the suitability of the equipment for any particular purpose as performance may vary with the conditions encountered. The only warranty applicable is our standard written warranty for this equipment or service.

P&H, P&H MinePro Services, P&H Centurion and PreVail are trademarks of Joy Global Inc. or one of its affiliates. © 2011 P&H Mining Equipment Inc. All rights reserved.



P&H MinePro Services
1-888-MINEPRO
Outside the U.S. and Canada
Phone: (414) 671-4400
Fax: (414) 670-7306