

## 320XPC

### Rotary Blasthole Drill Product Overview





## 320XPC Rotary Blasthole Drill Rugged, Smart and Maintenance-Friendly for High Availability and Productivity

Joy Global 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 Joy Global 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



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

## 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 Joy Global's proven Centurion electrical 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 Management

Joy Global's PreVail® Remote Health Management (RHM) system is a powerful tool available on P&H drills. PreVail (RHM) combines advanced information management and wireless communication technology to enable mine management and the Joy Global support network to optimize drill process efficiency for lower cost operation and increase d 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.

## Arctic 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

Joy Global 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

Joy Global'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.

# 320XPC

## Rotary Blasthole Drill



### 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

### Working Ranges

Hole Diameter	270 mm to 444 mm	10 7/8 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

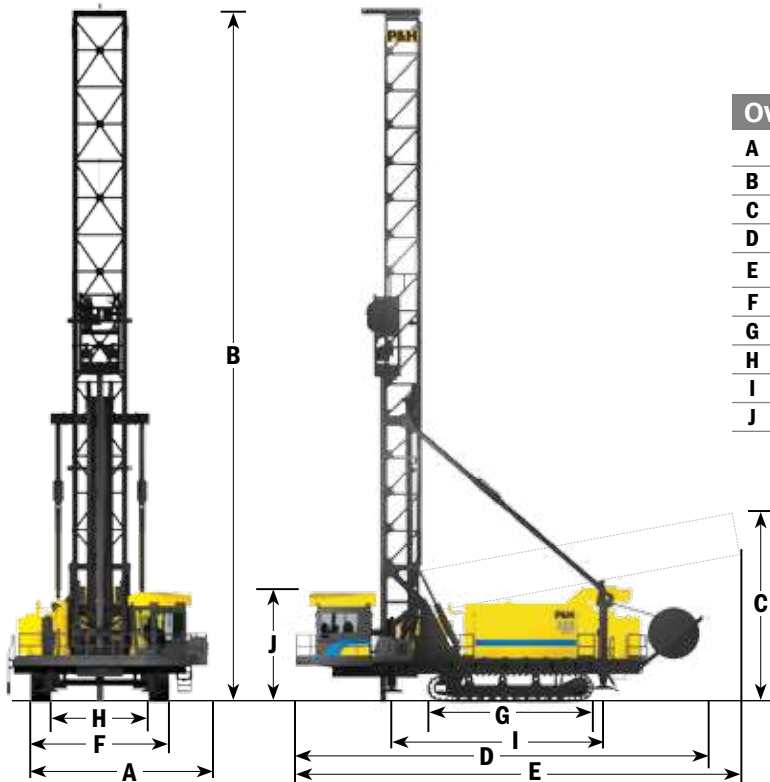
Construction	Lattice type using alloy steel structural shapes		
Mast	Standard:	19.81 m	65 ft.
	Optional:	21.3 m	70 ft.
Raising and Lowering	Two hydraulic cylinders Standard diameter:	267 mm	10.5 in.

### 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	

### 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™		



### Overall Dimensions

<b>A</b>	Width, overall	8.51 m	27 ft. 11 in.
<b>B</b>	Height, mast up	30.6 m	100 ft. 6 in.
<b>C</b>	Height, mast down	10.2 m	33 ft. 6 in.
<b>D</b>	Length, mast up	18.50 m	60 ft. 8 in.
<b>E</b>	Length, mast down	32.88 m	107 ft. 10 in.
<b>F</b>	Overall width of crawlers	6.1 m	20 ft.
<b>G</b>	Overall length of crawlers	7.3 m	24 ft.
<b>H</b>	Width of jacks	4.6 m	15 ft. 2 in.
<b>I</b>	Length between jacks	10.3 m	33 ft. 7 in.
<b>J</b>	Height to top of op. cab	4.86 m	15 ft. 11 in.

### 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:** LED floodlights for work and area lighting

### 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

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### 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		
914 mm (36 in.) shoes	200 kPa	29.0 psi
1117 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

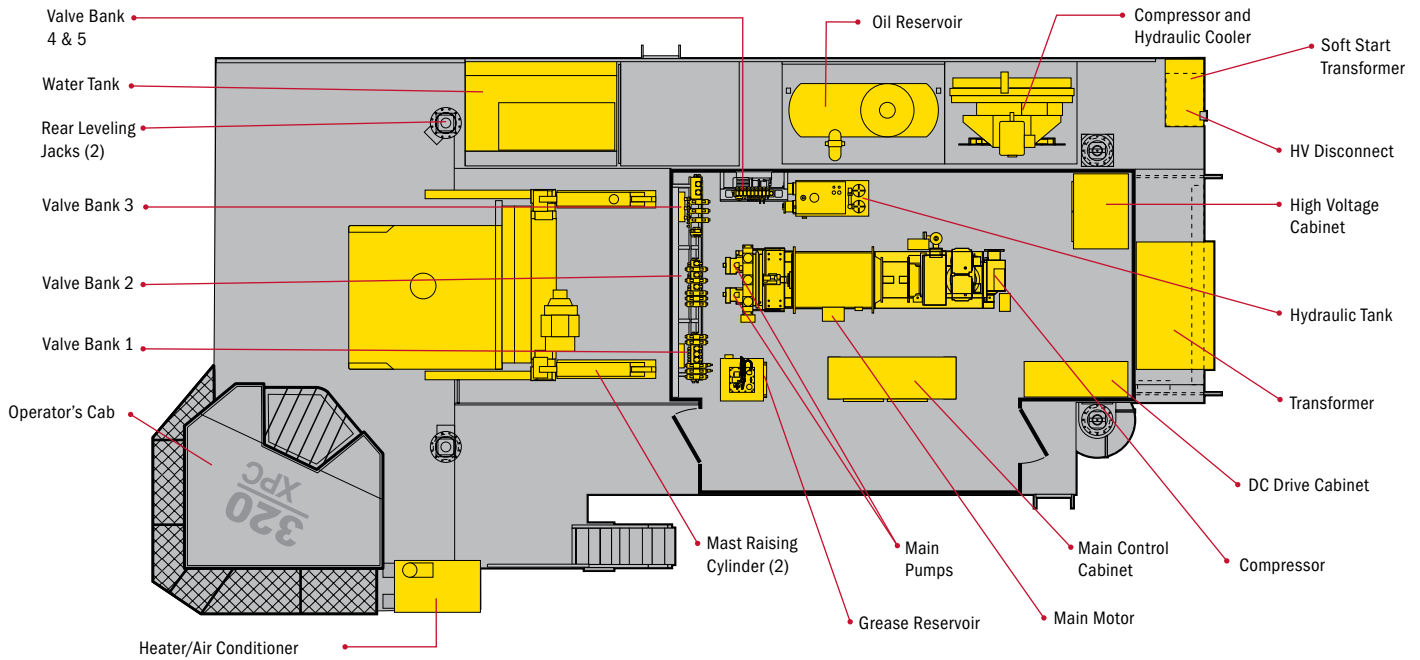
### Leveling Jacks

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		

### Lower/Propel

Crawler Type	Heavy-duty lug and tumbler drive system, Joy Global design		
Shoe Width	Standard:	914 mm	36 in.
	Optional:	1117 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:	1.28 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 SSS Series oil-flooded screw type

Available Volumes	Standard:	97 m <sup>3</sup> /min	3,450 cfm*
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Sullair oil-flooded screw type

Available Volumes	Optional:	109 m <sup>3</sup> /min	3,850 cfm*
requires 746 kW / 1000 hp main motor			

Operating Pressure	448 kPa	65 psi
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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
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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
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Main Drive Motor	Standard:	522 kW	700 hp
	Optional:	746 kW	1,000 hp

VFD Compressor Oil Cooler Fan:	22.4 kW	30 hp
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Machinery House Fans:	2 x	5.6 kW	7.5 hp
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Hoist Blower Motor:	.75 kW	1.0 hp
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Auxiliary Hydraulic Pump:	1.1 kW	1.5 hp
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Compressor Oil Circulation Pump:	14.9 kW	20 hp
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Cable Reel Hydraulic Pump Motor:	3.7 kW	5 hp
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Water Injection Pump Motor:	.75 kW	1.0 hp
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### Hydraulic System

Main System	Closed loop design utilizing dual variable-displacement piston pumps for propel
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®\* and Terrain Interface Package
- PreVail® Remote Health Management
- Remote Propel Control
- Shock Sub Adaptor
- Soft Start Transformer
- Stand Alone Welder
- Tow Package
- Wiggins 'Fastfil' System

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