

# KOMATSU

# P&H

## 1900XPC

Electric Mining Shovel – AC Drive  
Product Overview



### Who we are:

Since 1921, Komatsu has stood for unrivaled quality and reliability. Our enduring global success stems from the principles of our founder, Meitaro Takeuchi, who envisioned a sustainable future built through globalization, quality first, technology innovation and talent development. These defining principles, along with an emphasis on safety and compliance, remain part of our Komatsu DNA. With each brand and company added to the Komatsu family, we expand our capabilities, leveraging our global teams to push beyond what can be done and create what can be imagined. We believe partnering directly with our stakeholders and being in the workplace (gemba) is the best way to gain insight into their challenges, win their trust and develop cutting-edge solutions.

### What we do:

Komatsu is an indispensable partner to the mining, forestry, industrial and construction industries that maximizes value for customers through innovative solutions. With a full line of products supported by our advanced IoT technologies and global service network, we help customers safely and sustainably optimize their operations. Our **Komatsu, P&H, Joy** and **Montabert** equipment and services are used to extract fundamental minerals and develop modern infrastructure.

## P&H 1900XPC Shovel building on proven success

Mine operations and maintenance managers demand the best from their loading tools. For this reason, Komatsu Mining has been the electric mining shovel market share leader and preferred equipment supplier to the world's toughest mining environments for over 100 years.

Komatsu is proud to offer the **P&H 1900XPC** electric mining shovel. The P&H shovel line is combining its solid reputation of reliability with the proven Centurion electrical control system, industry leading IGBT AC systems, rugged structures and the industry's only direct field service and support network to set the industry standard for electric mining shovels.

Increases in availability and productivity ultimately lead to the lowest cost per ton and the most efficient ultra-class loading tool available in the industry today. P&H shovels dig deeper into the realms of productivity, safety and reliability with greater control, comfort and consistency.



## Proven performance

P&H electric shovels are exceeding customer requirements and expectations since 1920:

- Low total cost of ownership
- High productivity
- Excellent machine reliability and durability

### We set the industry standard for electric mining shovels

#### A closer look

P&H 1900XPC features:

- IGBT AC technology
- Dual planetary propel
- Proven steel structures



Komatsu Mining is the worldwide leader in electric mining shovels. The P&H 1900XPC sets the standard in performance and productivity.

## The P&H performance edge

### Attachment of choice for the world's toughest applications

- Twin-leg dipper handle – Stable dipper trajectory, faster cycle times, higher productivity
- Rack and pinion crowd – Less maintenance, all weather performer
- P&H dippers – Mine-matched dippers with adjustable pitch braces for precise rake angles

### Operator cab

Performance and comfort have been optimized with:

- Smart ergonomics
- Clear sight lines
- Easy access to command and control functions
- Access to key data on machine health and performance provided by Centurion electrical control system

### Technology

- Centurion electrical control system – Superior performance, monitoring and data integration capabilities
- PreVail remote health management – Real time machine health and performance management

### Smart Solutions

Our smart connected products and systems, advanced analytics and direct services are integrated together and customized to solve our customers' toughest challenges:

- Service products and consumables
- Machine assembly and rebuild
- Component exchange programs
- Life cycle management
- Genuine OEM parts
- Prognostics and remote health management

- Designed for *severe-duty* digging and loading
- Years of experience in building rugged, reliable equipment
- Extensive collaboration with customers and our partner ABB during development

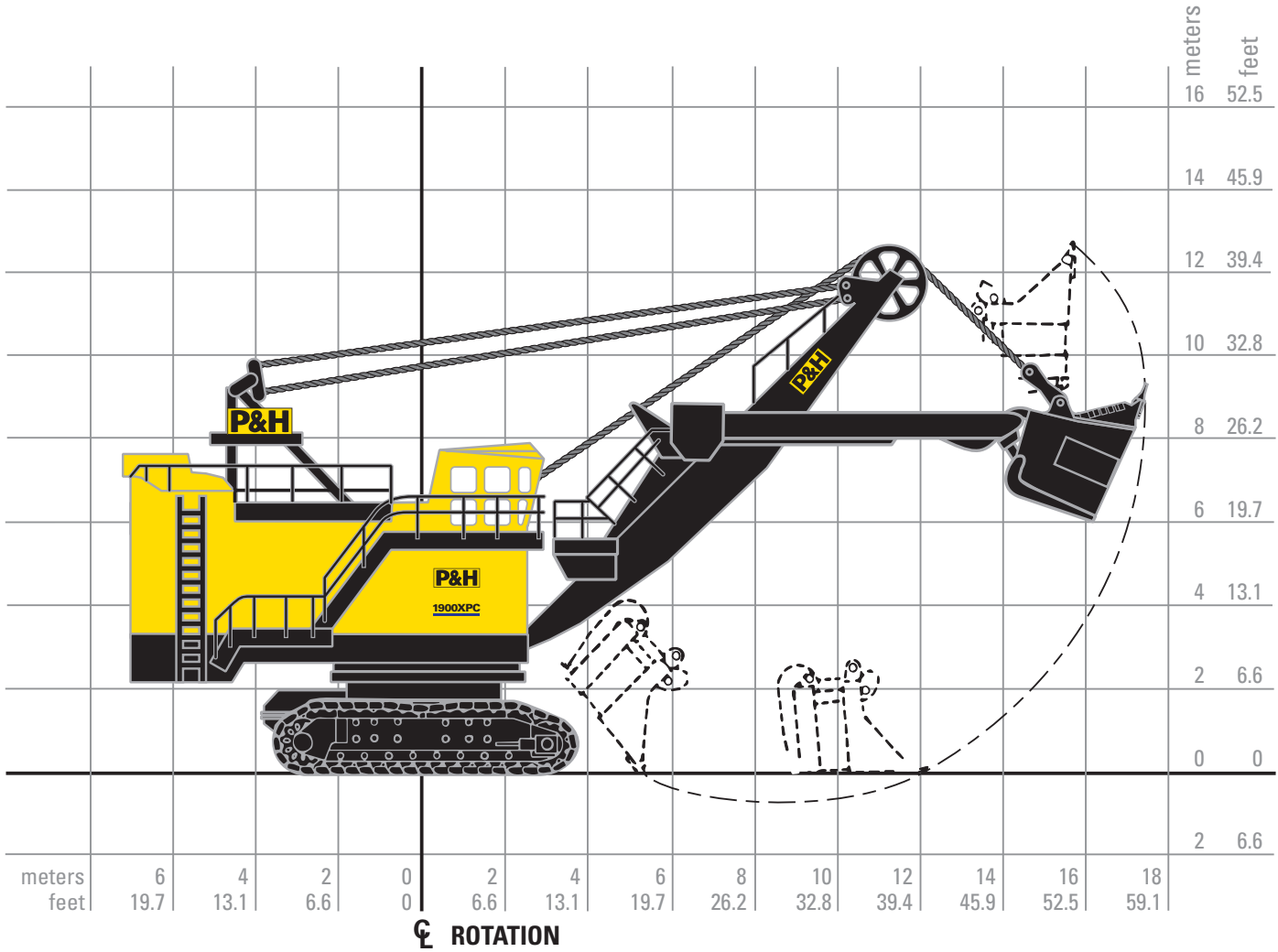
### We are driven by achieving the lowest total cost of ownership for our customers:

- Quality components
- Focus on machine availability and productivity
- Heavy-duty structures
- Komatsu Mining field support



# P&H 1900XPC Electric Mining Shovel – AC Drive

## General Specifications



Working ranges		
Height of cut	13.0 m	42 ft. 6 in.
Radius of cut	17.8 m	58 ft. 6 in.
Dumping height* (door open)	8.2 m	27 ft. 0 in.
Floor level radius	11.6 m	38 ft. 0 in.
Tail swing radius	7.0 m	23 ft. 0 in.
Operator eye level	7.4 m	24 ft. 3 in.

\*Height shown with bail-type dipper. Heights will be greater with bail-less or compact-bail dippers. Actual dumping height can be greater than door clearance height.

Capacity		
Nominal payload*	18 mt	20 st
Nominal dipper capacity*	10.7 m <sup>3</sup>	14 yd <sup>3</sup>
Range dipper capacity	7.5-19.1 m <sup>3</sup>	10-25 yd <sup>3</sup>
Rated suspended load	37.2 mt	41 st

\*Payload and dipper capacity are dependent on many factors. Contact Komatsu Mining for an analysis of your specific application.

## Electrical control

Centurion supervisory controller provides direct integrated communication with motor drives giving precise motor control and fast cycle times. 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 shovel 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 shovel status, troubleshooting information, and optional production monitoring data and operator feedback

P&H digital AC drive provides precise, reliable, solid state power to the main motion motors.

## Electrical control systems

The electrical drive system is comprised of a multi drive platform, sharing a common DC bus between the IGBT Supply Unit (ISU) and the motor drive Inverter Units (INU). The fully regenerative ISU controls the power flow to and from the shovel, maintaining a unity power factor with extremely low harmonic content. The fully regenerative INU controls the power flow to and from the individual AC motors.

## P&H AC fast response main machinery motors

Hoist motor (one used)	Continuous rating @ 500 V peak developed power	Total 328 kW / 440 hp 455 kW / 610 hp
Swing motor (two used)	Continuous rating @ 500 V peak developed power	Total 203 kW / 272 hp 295 kW / 395 hp
Crowd motor (one used)	Continuous rating @ 500 V peak developed power	Total 128 kW / 172 hp 236 kW / 316 hp
Propel motor (two used)	Continuous rating @ 500 V peak developed power	Total 203 kW / 272 hp 352 kW / 472 hp

## Power requirements

Supply voltage*	2400 / 4160 V 3 Phase, 60 Hz	3300 / 6600 V 3 Phase, 50 Hz
Supply transformer	(minimum) 1250 kVA	
Minimum short circuit VA available at shovel	13 MVA	

\*Voltage per customer requirements

## Ground pressure and weight

### Bearing area – ground pressure

Standard:		
Crawler bearing area 42" Shoes / 1066 mm	14.23 m <sup>2</sup>	22,060 in <sup>2</sup>
Crawler ground pressure 42" Shoes / 1066 mm	2.66 kg/cm <sup>2</sup>	37.9 psi
Optional:		
Crawler bearing area 48" Shoes / 1219 mm	16.27 m <sup>2</sup>	25,210 in <sup>2</sup>
Crawler ground pressure 48" Shoes / 1219 mm	2.35 kg/cm <sup>2</sup>	33.4 psi

### Weights – approximate\*

Working weight (includes dipper and counterweight)

42" Shoes / 1066 mm	378,756 kg	835,000 lbs
48" Shoes / 1219 mm	381,931 kg	842,000 lbs
Counterweight (punchings)**	54,432 kg	120,000 lbs
Minimum density	4,245 kg/m <sup>3</sup>	265 lb/ft <sup>3</sup>

\* All weights subject to 5% variation.

\*\* To be furnished by customer.

## Cable data

	Type	Size	Length
Hoist (2 required)	14	38 mm 1.5 in.	73.15 m 240 ft.
Boom suspension (4 required)	25	51 mm 2 in.	14.66 m 48 ft. 1 in.
Dipper trip – electric	12	13 mm .5 in.	15.24 m 50 ft.

\*45° boom angle

## Features and customization

The P&H 1900XPC is built with several features to enhance safety, reliability and productivity over the lifecycle of the operation.

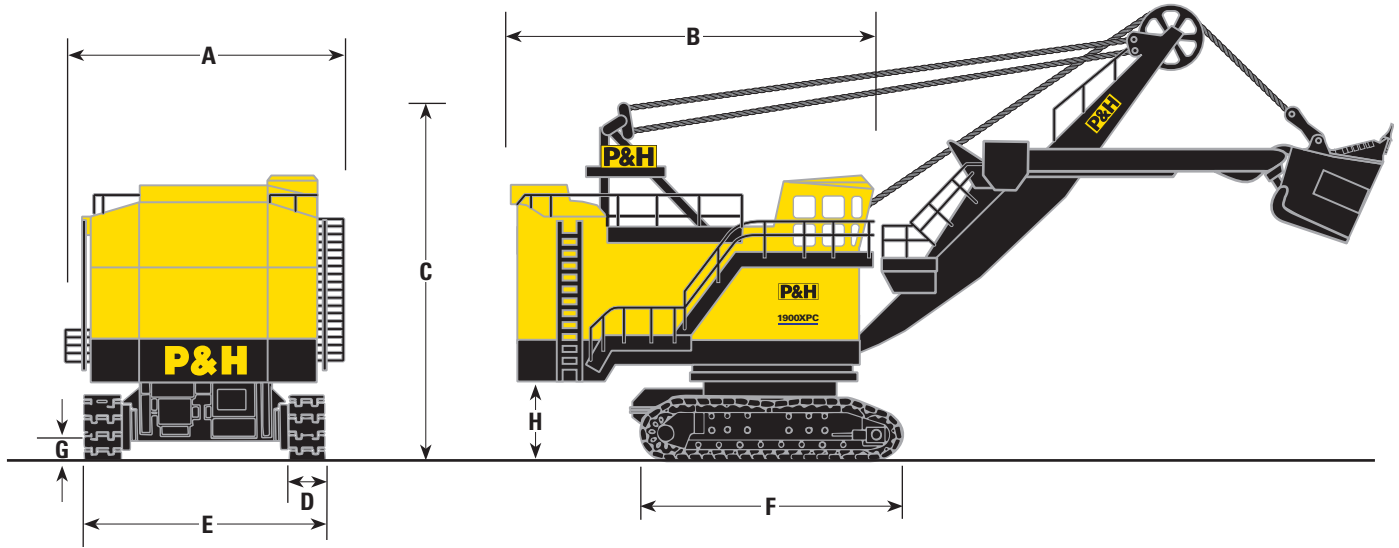
- Automatic lubrication and compressed air systems with advanced diagnostic and control
- Automatic Boom Soft Setdown system (ABSS) and boom profile protection envelope to help prevent excessive loading to the attachment during operation
- Anti-swing-in-bank system to reduce excessive side loading on handle and attachment
- Hoist rope winch to assist in safe and efficient rope changeouts
- House pressurization system to provide filtered air for cooling and dust repression

The shovel has multiple options for local and minesite specific conditions in the following areas:

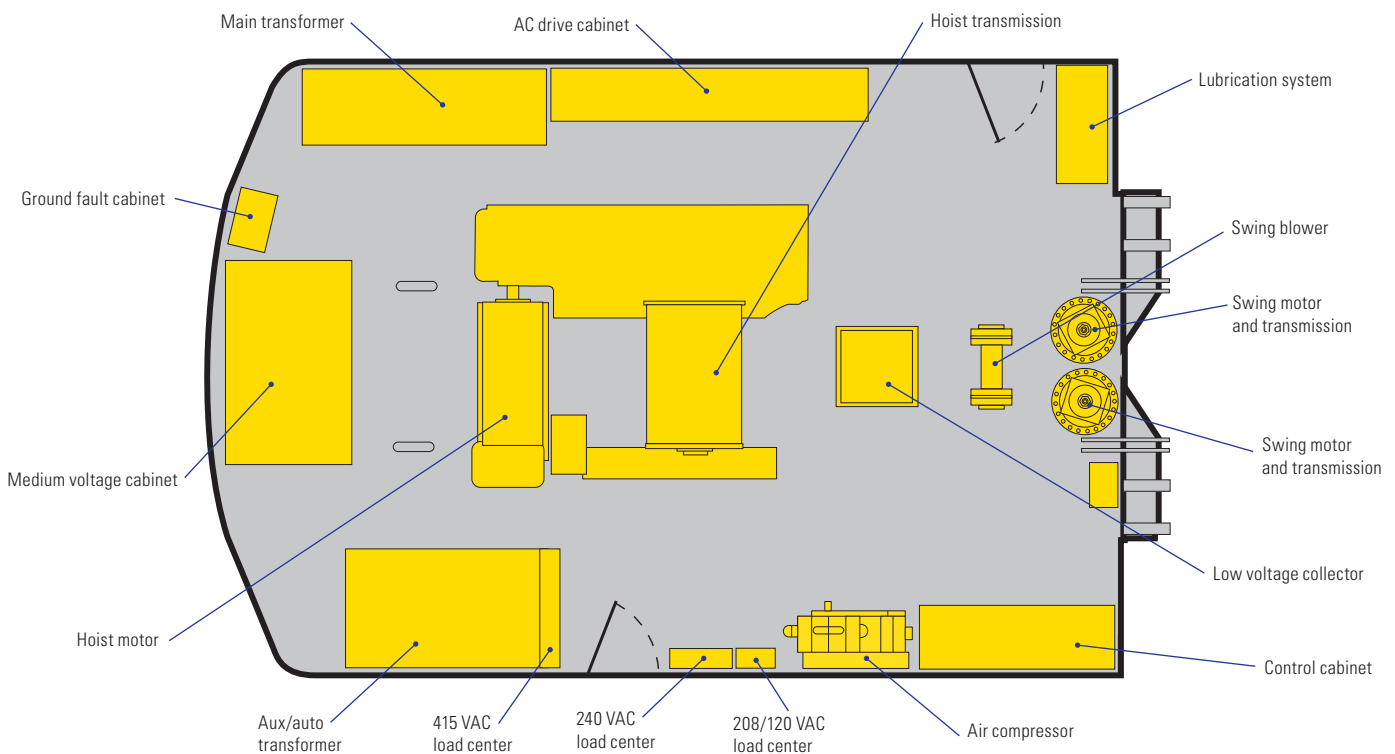
- Climate control
- Technology and software
- Maintenance systems

## Overall dimensions

A	Width	8.05 m	26 ft. 5 in.
B	Length	10.36 m	34 ft. 0 in.
C	Height over gantry	10.11 m	33 ft. 2 in.
D	Width of crawler shoes	1066 mm	42 in.
		1219 mm	48 in.
E	Width of crawlers (42")	6.71 m	22 ft. 0 in.
F	Length of crawlers	7.62 m	25 ft. 0 in.
G	Ground clearance	0.66 m	2 ft. 2 in.
H	Height — ground to bottom of counterweight slabs	1.70 m	5 ft. 7 in.



## Machinery deck plan



# P&H 1900XPC Electric Mining Shovel

## Hoist

Gear case		Oil tight
Drum pitch diameter	997 mm	39¼ in.
Drum length	1168 mm	46 in.
Drum groove arrangement	Single part quadruplex hoist cable	
Drum shaft bearings	Tapered roller	
Other bearings	Tapered and straight roller	
First reduction gears	Modified helical	
Other gears	Spur	
Hoist brake	Spring-set-air release	
Hoist brake location	Outboard of hoist gear case	
Boom point sheaves pitch diameter	1676 mm	66 in.
Boom point bearing	Tapered roller	

## Swing

Swing transmission (two used)		Planetary
Swing gear		External cut teeth
Swing gear diameter	3.96 m	13 ft.
Swing brakes (two used)	Spring set-air release	
Swing brake location	Motor shaft	
Type of swing	Live roller circle	
Number of rollers in roller circle	Sealed tapered 40	
Tapered roller diameter	228.6 mm	9 in.
Roller track mean diameter	3.66 m	12 ft.
Type of fastening to upper	Center gudgeon	
Location of gudgeon adjusting nut	On upper	

## Propel

Propel transmission (two used)		Planetary
Propel brakes (two used)	Spring set-air release	
Propel brake location	Motor shaft	
Center to center of sprockets	6.17 m	20 ft. 3 in.
Front idler diameter	1092 mm	43 in.
Number of lower rollers, each crawler frame	8	
Diameter of lower rollers	558 mm	22 in.
Width of crawler shoes (standard)	1066 mm	42 in.
Width of crawler shoes (optional)	1219 mm	48 in.
Pitch of crawler shoes (42" & 48")	375 mm	14.75 in.
Number of crawler shoes (42" & 48") (both crawlers)	88	
Propel speed	1.66 kmph	1.03 mph

## Crowd

Gear case	Oil tight, welded integral with boom	
First reduction gearing	Conical worm	
Worm and wheel bearings	Tapered and straight roller	
Shipper shaft bearing type	Sleeve	
Shipper shaft bearing diameter	305 mm	12 in.
Shipper pinion pitch diameter	387 mm	15.25 in.
Access to crowd machinery	Railed platform	
Crowd brake	Spring set-air release	
Crowd brake location	Motor shaft	



Contact a Komatsu Mining service representative for more information on the P&H 1900XPC electric mining shovel or visit <https://mining.komatsu>

## Komatsu Mining Corp. Group

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