2300XPC
Electric Mining Shovel – DC Drive
Product Overview
P&H 2300XPC DC Shovel
building on proven success

Mine operations and maintenance managers demand the best from their loading tools. For this reason, Komatsu 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 2300XPC DC electric mining shovel. The P&H shovel line is combining its solid reputation of reliability with the proven Centurion electrical control system, time-tested DC 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 DC-drive 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

P&H 2300XPC DC utilizes proven components:
- Structures developed with advanced design software and field data collection
- Motors designed and manufactured by Komatsu specifically for electric mining shovels

A closer look

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
- Optima dippers – Mine-matched dippers with adjustable pitch braces for precise rake angles

Rugged components
- Dual hoist motors – Balanced and evenly distributed load
- Delta drive – Improved shoe-to-tumbler engagement
- Planetary transmissions – Proven long life on swing and propel with over 20 million hours logged

Technology
- Centurion electrical control system – Superior performance, monitoring and data integration capabilities
- Universal shovel interface – Send and receive data with any mine management system
- PreVail remote health management – Real time machine health and performance management

World-class cab / loading control center
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

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

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

Komatsu is the worldwide leader in electric mining shovels. The P&H 2300XPC DC sets the standard in performance and productivity.

- 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 2300XPC Electric Mining Shovel – DC Drive

General Specifications

**Working Ranges**
- Height of cut: 13.5 m (44 ft. 3 in.)
- Radius of cut: 21.3 m (70 ft. 0 in.)
- Dumping height*: 8.5 m (28 ft. 0 in.)
- Floor level radius: 14.2 m (46 ft. 7 in.)
- Tail swing radius: 10.1 m (33 ft. 0 in.)
- Operator eye level: 7.9 m (26 ft. 0 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*: 45.4 mt (50 st)
- Nominal dipper capacity:
  - SAE 23: 18.9 x 25.5 m³
  - SAE 25: 20.2 x 27.8 m³
- Rated suspended load: 90.7 mt (100 st)
- Optimum truck size (200 st truck shown): 109-218 mt (120-240 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 DC drive provides precise, reliable, solid state power to the main motion motors.

**Electrical control systems**
- P&H digital DC static DC power conversion and reactive power compensation
  - Hoist/**Propel Swing Crowd/**Propel
  - Continuous armature converter kW rating @ 600 VDC:
    - Hoist: 2x1860 kW
    - Propell/Propel: 1860 kW
  - 15 Sec. armature converter current rating:
    - Hoist: 2x3700 amp.
    - Propell/Propel: 3700 amp.
  - Continuous field converter rating*:
    - Hoist: 150 amp.
    - Propell/Propel: 15 amp.

* Rated at 600 V and based on outside ambient temperature of 50°C or 122°F.

**P&H digital DC automatic reactive power compensation**
- Switched steps:
  - Total: +4725 kVAR
  - +4500 kVAR
  - Nominal rating at rated capacitor voltage (600 VAC)
- * Rated at 600 V and based on outside ambient temperature of 50°C or 122°F.

**P&H DC fast response main machinery motors**
- Hoist motor (two used):
  - Continuous rating @ 600 volts peak developed power:
    - Total: 1074kW / 1442kW
- Swing motor (two used):
  - Continuous rating @ 600 volts peak developed power:
    - Total: 395kW / 530kW
- Crowd motor (one used):
  - Continuous rating @ 550 volts peak developed power:
    - Total: 441kW / 591kW
- Propel motor (two used):
  - Continuous rating @ 550 volts peak developed power:
    - Total: 612kW / 820kW

- Total 1442kW / 1933hp
- Total 395kW / 530hp
- Total 441kW / 591hp
- *Voltage per customer requirements

**Power requirements**
- Supply voltage: 4160 or 7200V
- Convertor rating:
  - Hoist: 150 amp.
  - Swing: 150 amp.
  - Crowd: 150 amp.
- * Rated at 600 V and based on outside ambient temperature of 50°C or 122°F.

**Dipper and dipper trip**
- Optima dippers combine consistent productivity with high durability and maintainability. Dippers are configured to mine specific conditions and capacity requirements from a variety of combinations of body and lip designs, as well as other unique Komatsu technologies. Specific wear packages and S&T styles can be cooperatively specified.

**Swing**
- Two modular P&H planetary gear cases of proven design and a single piece forged swing gear transmit torque for fast cycle times.
- Spring set air release disc brakes – one per motor.
- Splash lube filtration system.

**Propel**
- Two rugged P&H planetary gear cases of proven design independently transmit torque to the drive sprockets, producing the reactive effort required for fast, efficient propel and positioning operations.
- P&H drive system with heavy duty cast crawler shoes.
- Spring set air release disc brakes – one per motor.

**Crowd**
- Powerband V belt drive between motor and gear case absorbs shock loads.
- First and second reduction gearing in enclosed gear case for reliable splash lubrication, ease of maintenance, and extended component life.
- Twin leg dipper handle with torsion box and rack and pinion drive has inherent stability in the bank for optimal digging.
- Spring set air release disc brake.

**Hoist**
- All gearing housed in single enclosed gear case with filtered and cooled oil feed to all bearings in addition to splash lubrication for reliable operation and ease of maintenance.
- Large 56” diameter hoist drum for extended rope bending life. Ferrule becket system and dual electric tuggers are standard for efficient rope change.
- Spring set air release disc brake – one per motor.

**Cable data**
- Hoist (wire rope): 57 mm (2.25 in. dia.)
- Suspension (bridge strand): 83 mm (3.25 in. dia.)
- Dipper (wire rope): 13 mm (0.50 in. dia.)

**Payload and dipper capacity**
- It is recommended to use SAE 23 size dipper and propel for more consistent productivity with high durability.

**Minimum short circuit VA available at shovel:** 16 MVA

**Voltage per customer requirements**
- Contact Komatsu Mining for an analysis of your specific application.
Overall dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Width</td>
<td>12.5 m (40 ft. 10 in.)</td>
</tr>
<tr>
<td>B Length</td>
<td>15.0 m (49 ft. 4 in.)</td>
</tr>
<tr>
<td>C Height over gantry</td>
<td>11.6 m (38 ft. 0 in.)</td>
</tr>
<tr>
<td>D Width of crawler shoes</td>
<td>1321 mm (52 in.)</td>
</tr>
<tr>
<td>E Width of crawlers (52&quot;)</td>
<td>8.7 m (28 ft. 5 in.)</td>
</tr>
<tr>
<td>F Length of crawlers</td>
<td>9.9 m (32 ft. 4 in.)</td>
</tr>
<tr>
<td>G Ground clearance</td>
<td>0.9 m (3 ft. 0 in.)</td>
</tr>
<tr>
<td>H Height — ground to bottom of counterweight slabs</td>
<td>2.6 m (8 ft. 5 in.)</td>
</tr>
</tbody>
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Machinery deck plan

**Leading control center**

- Anteroom (shown with optional toilet)
- Space for appliances
- Electrical cabinet
- Trainer's station
- Lockers
- Storage cabinet
- Armrest mounted, pistol grip joysticks
- 6-way power adjustable air suspension seat with heat and vibratory massage

**Ground pressure and weight**

**Bearing area — ground pressure**

- **Standard:**
  - Crawler bearing area: 52" shoes / 1321 mm
  - Crawler ground pressure: 381 kPa / 55.3 psi

- **Optional:**
  - Crawler bearing area: 70" shoes / 1778 mm
  - Crawler ground pressure: 288 kPa / 41.8 psi

**Weights — approximate**

- **Working weight (with dipper, approx. wt.)**
  - 52" shoes / 1321 mm: 774,800 kg / 1,708,000 lbs
  - 70" shoes / 1778 mm: 787,500 kg / 1,736,000 lbs

- **Counterweight (punchings)**
  - 136,100 kg / 300,000 lbs

* All weights subject to 5% variation.
** To be furnished by customer.

**Features and customization**

- Automatic lubrication and compressed air systems with advanced diagnostic and control
- Temperature monitoring system for all DC motors, drum shaft bearings and shipper shaft bearings
- 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
- Remote hoist control pendant and 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

**Contact a Komatsu Mining service representative for more information on the P&H 2300XPC electric mining shovel or visit https://mining.komatsu**