2800XPC
Electric Mining Shovel – DC Drive
Product Overview
P&H 2800XPC DC 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 2800XPC 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. Proven 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 have been exceeding customer requirements and expectations since 1920.

- Lowest total cost of ownership
- Highest productivity
- Superior machine reliability and durability

We set the industry standard for electric mining shovels

A closer look

The P&H 2800XPC 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

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

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

Proven performance

- 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 is the worldwide leader in electric mining shovels. The P&H 2800XPC DC sets the standard in performance and productivity.

P&H 2800XPC Electric Mining Shovel – DC Drive
P&H 2800XPC DC Drive Electric Mining Shovel – DC Drive

General Specifications

**P&H 2800XPC DC Drive Electric Mining Shovel**

- **Operator eye level**: 9.6 m (31 ft. 4 in.)
- **Tail swing radius**: 9.9 m (32 ft. 6 in.)
- **Floor level radius**: 16.4 m (53 ft. 9 in.)
- **Dumping height**:
  - Radius of cut: 24.2 m (79 ft. 3 in.)
  - Height of cut: 16.6 m (54 ft. 6 in.)
**Working ranges**

<table>
<thead>
<tr>
<th>Height of cut</th>
<th>16.6 m</th>
<th>54.6 ft.</th>
<th>6 in.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius of cut</td>
<td>24.2 m</td>
<td>79 ft. 3 in.</td>
<td></td>
</tr>
<tr>
<td>Dipping height*</td>
<td>9.1 m</td>
<td>30 ft. 0 in.</td>
<td></td>
</tr>
<tr>
<td>Floor level radius</td>
<td>16.4 m</td>
<td>53 ft. 9 in.</td>
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<td>Tail swing radius</td>
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</tbody>
</table>

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**Capacity**

<table>
<thead>
<tr>
<th>Nominal peak load*</th>
<th>59.0 m t</th>
<th>65.0 st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal dipper capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAE-24 &amp; SAE-22</td>
<td>26.9 &amp; 33.6 m³</td>
<td>35.0 &amp; 44.0 yd³</td>
</tr>
<tr>
<td>Rated suspended load</td>
<td>122.5 m t</td>
<td>135. st</td>
</tr>
<tr>
<td>Optimum truck size (278 m (340 st) track shown)</td>
<td>172-240 m</td>
<td>190-265 st</td>
</tr>
</tbody>
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**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 optional 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 trouble shooting.

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 DC drive provides precise, reliable, solid state power to the main motion motors.

**Electrical control system**

P&H digital DC static DC power conversion and reactive power compensation

<table>
<thead>
<tr>
<th>Hoist**/Propel</th>
<th>Swing</th>
<th>Crowd/Propel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous armature converter KV rating @ 600 VDC</td>
<td>2x1860 kW</td>
<td>1860 kW</td>
</tr>
</tbody>
</table>

15 Sec. armature converter current rating

<table>
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<th>Hoist**/Propel</th>
<th>Swing</th>
<th>Crowd/Propel</th>
</tr>
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<tbody>
<tr>
<td>Continuous field converter rating*</td>
<td>3700 amp</td>
<td>3700 amp</td>
</tr>
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Continuous field converter rating*

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<th>Hoist**/Propel</th>
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<tr>
<td>Continuous armature converter KV rating</td>
<td>150 amp</td>
<td>150 amp</td>
</tr>
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**Based on outside ambient temperature of 50°C or 122°F. ** Cascaded hoist converters.

P&H digital DC automatic reactive power compensation*

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<th>Hoist**/Propel</th>
<th>Swing</th>
<th>Crowd/Propel</th>
</tr>
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<tbody>
<tr>
<td>Switched steps</td>
<td>2x475 kVAR Total</td>
<td>4500 kVAR Total</td>
</tr>
</tbody>
</table>

**Nominal rating at rated capacitor voltage (600 VAC)**

* Rated at 600 V AC based on outside ambient temperature of 50°C or 122°F. ** Cascaded hoist converters.

P&H DC fast response main machinery motors

<table>
<thead>
<tr>
<th>Hoist (two used)</th>
<th>Swing (two used)</th>
<th>Crowd (one used)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous rating @ 600 volts peak developed power</td>
<td>Total 1194kW / 1600hp</td>
<td>Total 746kW / 1000hp</td>
</tr>
<tr>
<td>Continuous rating @ 550 volts peak developed power</td>
<td>Total 1460kW / 1958hp</td>
<td>Total 1119kW / 1500hp</td>
</tr>
<tr>
<td>Continuous rating @ 550 volts peak developed power</td>
<td>Total 2065kW / 2768hp</td>
<td>Total 686kW / 920hp</td>
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P&H fast response main machinery motors

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Power requirements

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<tr>
<th>Supply voltage*</th>
<th>4160 or 7200V</th>
<th>3 Phase, 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply transformer</td>
<td>Minimum 2750 kVA</td>
<td></td>
</tr>
</tbody>
</table>

**Cable data**

<table>
<thead>
<tr>
<th>Hoist (wire rope)</th>
<th>80 mm</th>
<th>2.38 in. dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspension (bridge strand)</td>
<td>90 mm</td>
<td>3.50 in. dia.</td>
</tr>
<tr>
<td>Dipper trip (wire rope)</td>
<td>13 mm</td>
<td>0.50 in. dia.</td>
</tr>
</tbody>
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**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 GET styles can be cooperatively specified.

TriPro™ system utilizes a brushless DC electric motor with sealed planetary drive unit for reliable trip and slack take-up operation.

**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.

Delta drive low tension sprocket 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 tension 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 fed to all bearings in addition to splash lubrication for reliable operation and ease of maintenance. Large 16” 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 brakes – one per motor.
P&H 2800XPC Electric Mining Shovel – DC Drive

Komatsu Mining Corp. Group

Overall dimensions

<table>
<thead>
<tr>
<th></th>
<th>A Width</th>
<th>B Length</th>
<th>C Height over gantry</th>
<th>D Width of crawler shoes</th>
<th>E Width of crawlers (60&quot;)</th>
<th>F Length of crawlers</th>
<th>G Ground clearance</th>
<th>H Height — ground to bottom of counterweight slabs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13.1 m</td>
<td>43 ft. 0 in.</td>
<td>14.8 m</td>
<td>48 ft. 8 in.</td>
<td>12.4 m</td>
<td>40 ft. 9 in.</td>
<td>10.8 m</td>
<td>35 ft. 5 in.</td>
</tr>
</tbody>
</table>

Loading control center

Ante room  (shown with optional toilet)
Space for appliances
Trainer’s station
Lockers
Storage cabinet
Electrical cabinet
Touchscreen GUI and optional remote camera system
Armrest mounted, pistol grip joysticks
6-way power adjustable air suspension seat with heat and vibratory massage

Features and customization

The P&H 2800XPC 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
- 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

Ground pressure and weight

Bearing area — ground pressure

<table>
<thead>
<tr>
<th>Standard</th>
<th>Crawler bearing area 56&quot; Shoes / 1422 mm</th>
<th>23.94 m²</th>
<th>37212 in²</th>
<th>442 kPa</th>
<th>64.10 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional</td>
<td>Crawler bearing area 72&quot; Shoes / 1829 mm</td>
<td>30.78 m²</td>
<td>47126 in²</td>
<td>345 kPa</td>
<td>50.09 psi</td>
</tr>
</tbody>
</table>

Weights — approximate*

<table>
<thead>
<tr>
<th>Working weight (with dipper and counterweight, approx. wt.)</th>
<th>56&quot; shoes / 1422 mm</th>
<th>1,079,000 kg</th>
<th>2,379,000 lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counterweight (punching)**</td>
<td>230,000 kg</td>
<td>507,000 lbs</td>
<td></td>
</tr>
</tbody>
</table>

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

Machinery deck plan

Lubrication room

Lift wall I/O box

Hoist motor

Reactive power compensation cabinet

Swing motor and transmission

Converter cabinet

Ground fault suppression cabinet

Auxiliary circuit breaker

Auxiliary transformer

Main transformer

High-voltage cabinet with isolators

Lighting load center

1362 Liter /360 gal. grease reservoir

984 Liter /260 gal. OGL reservoir

Converter cabinet

Swing motor and transmission

Hoist motor

120 VAC load center

Front wall I/O box

Lube reservoir

660 Liter /175 gal. 80° C (180° F) OGL

Motor control center

DC link cabinet

Motor control center

Contact a Komatsu Mining service representative for more information on the P&H 2800XPC DC drive electric mining shovel or visit https://mining.komatsu