4100XPC
Electric Mining Shovel – AC Drive
Product Overview
P&H 4100XPC Electric Mining Shovel – AC Drive

Komatsu and ABB:
Two leaders combine to deliver breakthrough productivity and performance
ABB is the global leader in drives with 40+ years of experience.
• ABB’s Direct Torque Control has the best dynamic performance in the industry
• Our AC drives are compact, air-cooled, modular
• Maintenance-friendly modules are easy-to-replace

Komatsu Mining is the worldwide leader in electric mining shovels. The P&H 4100XPC AC sets the standard in performance and productivity.

• Powerful advancements based on already-successful technologies
• Extensive collaboration with customers and our drive partner ABB
• Years of experience in building rugged, reliable equipment

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

P&H 4100XPC AC 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 4100XPC AC 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 technology, 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 tonne 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.

The P&H AC performance edge
We’ve achieved better performance throughout the entire shovel. That includes higher speed and peak horsepower. The shovel features improved electrical availability and overall reliability. In addition, the structures have been optimized to work efficiently with AC technology.

The benefits are clear:
• Better cycle time and utilization
• Improved job efficiency
• Higher rates of availability

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
• Pre/Post remote health management – Real time machine health and performance management

World-class cab:
• 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
P&H AC-Drive shovels are exceeding customer requirements and expectations:
• 3% faster cycle times
• 2.5% increase in availability
• 5% increase in productivity

Providing our customers:
• 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 4100XPC AC utilizes proven components:
• Common motors and drive line-up as on proven P&H 4100C BOSS AC and P&H 2800XPC AC machines, adapted to handle additional swing motor
• Structures developed with advanced design software and field data collection
• Motors designed and manufactured by Komatsu specifically for electric mining shovels
### P&H 4100XPC Electric Mining Shovel – AC Drive

#### General Specifications

<table>
<thead>
<tr>
<th>Working ranges</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height of cut</td>
<td>Nominal payload*</td>
</tr>
<tr>
<td>Radius of cut</td>
<td>Nominal dipper capacity</td>
</tr>
<tr>
<td>Dumping height* (door open)</td>
<td>Nominal dipper capacity</td>
</tr>
<tr>
<td>Floor level radius</td>
<td>Rated suspended load</td>
</tr>
<tr>
<td>Tail swing radius</td>
<td>Optimum truck size (360 mt (400 st) truck shown)</td>
</tr>
</tbody>
</table>

**Notes:**
- *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.
- *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.

#### Electrical control systems

<table>
<thead>
<tr>
<th>Electrical drive ratings</th>
<th>Drive power</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE 2:1</td>
<td>4950 kVA</td>
</tr>
<tr>
<td>Crowd motion</td>
<td>1180 kVA</td>
</tr>
<tr>
<td>Hoist motion</td>
<td>4640 kVA</td>
</tr>
<tr>
<td>Propel motion</td>
<td>2320 kVA</td>
</tr>
<tr>
<td>Swing motion</td>
<td>3480 kVA</td>
</tr>
</tbody>
</table>

#### 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 CET styles can be cooperatively specified.

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

#### Swing

Three 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.

#### Propulsion

Propel on demand provides rapid transfer to propel mode. Rapid transfers allow frequent positioning of the shovel to the bank resulting in faster cycle times and more efficient digging.

Two rugged P&H planetary gear cases of proven design independently transmit torque to the drive sprockets, producing the tractive 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

PowerV 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.

Two-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 fed to all bearings in addition to splash lubrication for reliable operation and ease of maintenance.

Large 68” 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.

#### Cable data

<table>
<thead>
<tr>
<th>Host (wire rope)</th>
<th>73 mt</th>
<th>2.75 in. dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspension (bridge strand)</td>
<td>102 mt</td>
<td>4.00 in. dia.</td>
</tr>
<tr>
<td>Dipper trip (wire rope)</td>
<td>19 mt</td>
<td>0.75 in. dia.</td>
</tr>
</tbody>
</table>
Features and customization

The P&H 4100XPC is built with several features to enhance safety, reliability, and productivity over the life cycle of the operation.

• Automatic lubrication and compressed air systems with advanced diagnostic and control
• Temperature monitoring system for all AC motors, drum shaft bearings, 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**

Standard:
- Crawler bearing area: 76” shoes / 1930 mm 34.58 m² 53,597 in²
- Crawler ground pressure: 76” shoes / 1930 mm 434.4 kPa 63.0 psi

Optional:
- Crawler bearing area: 87” shoes / 2210 mm 39.58 m² 61,354 in²
- Crawler ground pressure: 87” shoes / 2210 mm 379.9 kPa 55.1 psi

**Weights – approximate**

- Working weight (with dipper, approx. wt.):
  - 76” shoes / 1930 mm: 1,532,235 kg 3,378,000 lbs
  - 87” shoes / 2210 mm: 1,536,771 kg 3,389,000 lbs
- Counterweight (punchings)**: 204,100 kg 450,000 lbs

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