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

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 4100XPC 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

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

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

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

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 4100XPC Electric Mining Shovel – DC Drive

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

General Specifications

Capacity
Nominal payload* 99.8-108.9 mt   110-120 st
Nominal dipper capacity 52.8-61.2 m³   69-82 yd³
Nominal carrier capacity 58.3-67.6 m³   74.4-88.4 yd³
Continuous armature converter kW rating @ 600 VDC* 2x1860 kW 1860 kW
Continuous armature converter current rating* 3700 amp 3700 amp 3700 amp
Continuous field converter rating* 150 amp 150 amp 150 amp
Rated at 600 V and based on outside ambient temperature of 50°C or 122°F.
** Cascaded hoist converters.

Electrical control systems
P&H digital DC static power conversion and reactive power compensation
Continuous armature converter kW rating @ 600 VDC* 2x1860 kW 1860 kW
Continuous armature converter current rating* 3700 amp 3700 amp 3700 amp
Continuous field converter rating* 150 amp 150 amp 150 amp
Rated at 600 V and based on outside ambient temperature of 50°C or 122°F.
** Cascaded hoist converters.
P&H digital DC automatic reactive power compensation*

Power requirements
Supply voltage* 7200 or 13800 V 60 Hz (7 step) 50 Hz (8 step)
Power supply 2730 kW / 3713 hp
Continuous rating @ 600 volts 2148kW / 2880hp
Continuous rating @ 550 volts 1074kW / 1440hp
Continuous rating @ 550 volts 1119kW / 1500hp
Continuous rating @ 550 volts 537kW / 720hp
Continuous rating @ 550 volts 1348kW / 1796hp
Continuous rating @ 550 volts 6000, 6600, 7200 or 11000 V
Continuous rating @ 550 volts 2770kW / 3713hp
Continuous rating @ 550 volts 2770kW / 3713hp
Continuous rating @ 550 volts 2770kW / 3713hp
Continuous rating @ 550 volts 2770kW / 3713hp

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.

P&H brand Delta drive low tension sprocket drive system with heavy-duty cast crawler shoes.

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.

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.

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.

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 88” diameter hoist drum for extended rope bending life. Female becket system and dual electric tuggers are standard for efficient rope change.

Dipper and dipper trip
Optimal 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.

Contact Komatsu Mining for an analysis of your specific application.

Working ranges
Height of cut 16.8 m 55 ft. 2 in.
Radius of cut 23.9 m 78 ft. 8 in.
Dumpling height* (door open) 9.5 m 31 ft. 0 in.
Floor level radius 16.0 m 52 ft. 6 in.
Tail swing radius 9.8 m 32 ft. 3 in.
Operator eye level 10.1 m 33 ft. 1 in.

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

P&H 4100XPC Electric Mining Shovel – DC Drive

P&H 4100XPC DC Drive Electric Mining Shovel

General Specifications

Capacity
Nominal payload* 99.8-108.9 mt   110-120 st
Nominal dipper capacity 52.8-61.2 m³   69-82 yd³
Nominal carrier capacity 58.3-67.6 m³   74.4-88.4 yd³
Rated suspended load 195 mt 215 st
Optimum truck size (160 mt (400 st) truck shown) 218-363 mt 240-400 st
Continuous armature converter kW rating @ 600 VDC* 2x1860 kW 1860 kW
Continuous armature converter current rating* 3700 amp 3700 amp 3700 amp
Continuous field converter rating* 150 amp 150 amp 150 amp
Rated at 600 V and based on outside ambient temperature of 50°C or 122°F.
** Cascaded hoist converters.
P&H digital DC static power conversion and reactive power compensation
Continuous armature converter kW rating @ 600 VDC* 2x1860 kW 1860 kW
Continuous armature converter current rating* 3700 amp 3700 amp 3700 amp
Continuous field converter rating* 150 amp 150 amp 150 amp
Rated at 600 V and based on outside ambient temperature of 50°C or 122°F.
** Cascaded hoist converters.
P&H digital DC automatic reactive power compensation*

Power requirements
Supply voltage* 7200 or 13800 V 60 Hz (7 step) 50 Hz (8 step)
Supply transformer (minimum) 3750 kVAR

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.

P&H brand Delta drive low tension sprocket drive system with heavy-duty cast crawler shoes.

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.

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.

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.

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 88” diameter hoist drum for extended rope bending life. Female becket system and dual electric tuggers are standard for efficient rope change.

Dipper and dipper trip
Optimal 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.

Contact Komatsu Mining for an analysis of your specific application.

Working ranges
Height of cut 16.8 m 55 ft. 2 in.
Radius of cut 23.9 m 78 ft. 8 in.
Dumpling height* (door open) 9.5 m 31 ft. 0 in.
Floor level radius 16.0 m 52 ft. 6 in.
Tail swing radius 9.8 m 32 ft. 3 in.
Operator eye level 10.1 m 33 ft. 1 in.

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

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Standard</th>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>14.4 m</td>
<td>15.0 m</td>
<td>14.7 m</td>
</tr>
<tr>
<td>Length</td>
<td>15.0 m</td>
<td>16.0 m</td>
<td>16.7 m</td>
</tr>
<tr>
<td>Height over gantry</td>
<td>14.7 m</td>
<td>15.0 m</td>
<td>14.7 m</td>
</tr>
<tr>
<td>Width of crawler</td>
<td>1930 mm</td>
<td>2210 mm</td>
<td>1930 mm</td>
</tr>
<tr>
<td>Length of crawlers</td>
<td>11.7 m</td>
<td>13.0 m</td>
<td>11.7 m</td>
</tr>
<tr>
<td>Ground clearance</td>
<td>0.7 m</td>
<td>0.7 m</td>
<td>0.7 m</td>
</tr>
<tr>
<td>Height — bottom</td>
<td>3.6 m</td>
<td>3.6 m</td>
<td>3.6 m</td>
</tr>
<tr>
<td>Width of crawlers</td>
<td>10.2 m</td>
<td>11.0 m</td>
<td>10.2 m</td>
</tr>
<tr>
<td>Height over</td>
<td>10.2 m</td>
<td>11.0 m</td>
<td>10.2 m</td>
</tr>
</tbody>
</table>

Machinery deck plan

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 DC 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
- Remote hoist control pendant and hoist rope winch to assist in safe and efficient rope changeouts

Ground pressure and weight

<table>
<thead>
<tr>
<th>Bearing area</th>
<th>Ground pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>76” shoes / 1930 mm</td>
<td>418.9 kPa / 60.8 psi</td>
</tr>
<tr>
<td>87” shoes / 2210 mm</td>
<td>369.5 kPa / 53.6 psi</td>
</tr>
</tbody>
</table>

Weights – approximate*

| Working weight (with dipper, approx. wt.) | 1,486,900 kg / 3,278,000 lbs |
| Countermass (punchings)** | 204,100 kg / 450,000 lbs |

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

Features and customization

- Contact a Komatsu Mining service representative for more information on the P&H 4100XPC DC drive electric mining shovel or visit https://mining.komatsu