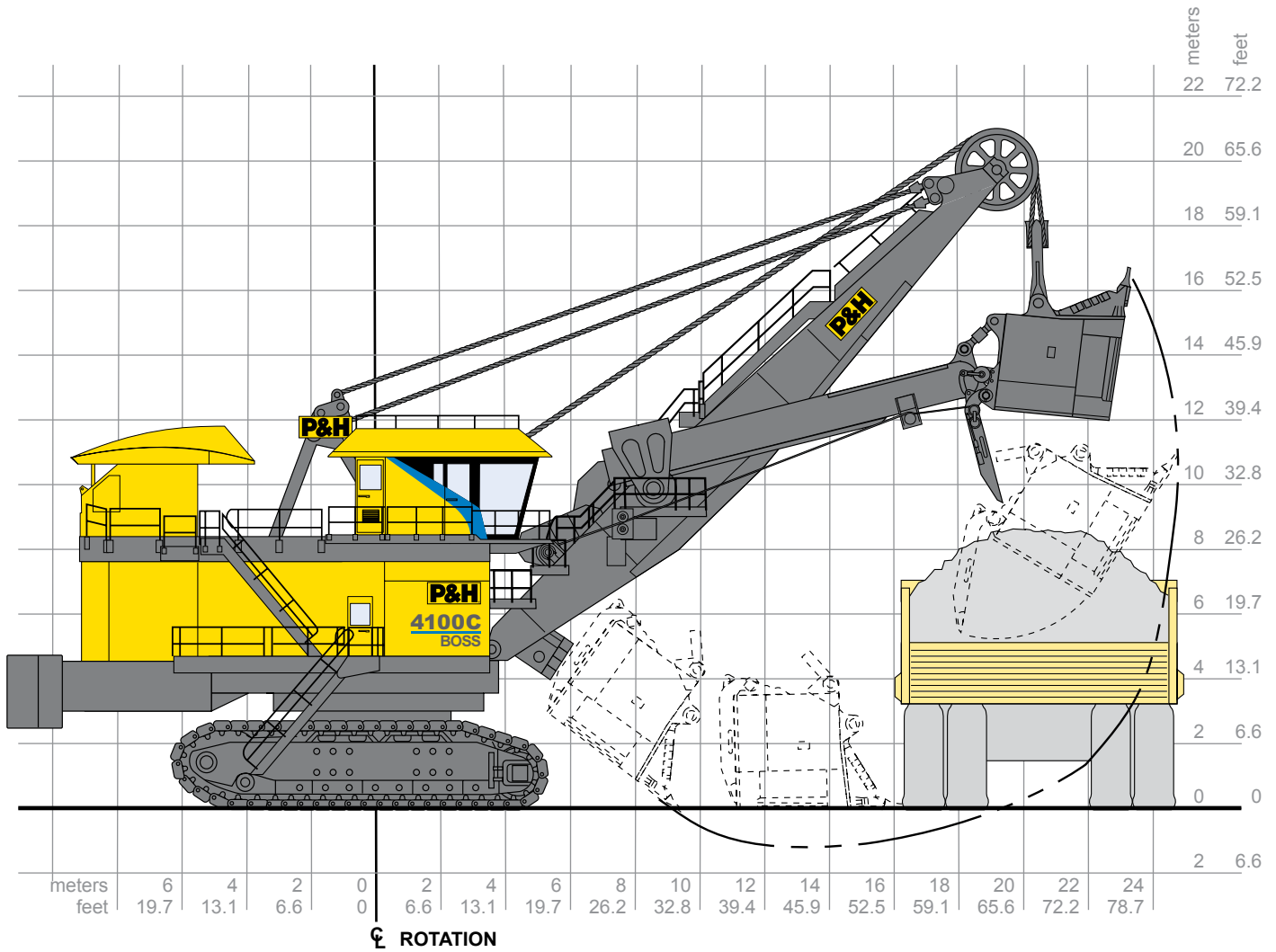


# 4100C BOSS

## Electric Mining Shovel

### Digital Drive Control

## Operating Specification



### Working Ranges

|                             |        |               |
|-----------------------------|--------|---------------|
| Height of Cut               | 16.9 m | 55 ft. 4 in.  |
| Radius of Cut               | 24.7 m | 80 ft. 11 in. |
| Dumping Height* (Door Open) | 9.5 m  | 31 ft. 0 in.  |
| Floor Level Radius          | 16.3 m | 53 ft. 5 in.  |
| Tail Swing Radius           | 11.6 m | 38 ft. 0 in.  |
| Operator Eye Level          | 9.8 m  | 32 ft. 3 in.  |

### Capacity

|  |                     |                      |
|--|---------------------|----------------------|
| Nominal Pay Load                           | 90.7 mt             | 100 st               |
| Nominal Dipper Capacity                    |                     |                      |
| SAE struck                                 | 48.2 m <sup>3</sup> | 63.0 yd <sup>3</sup> |
| SAE 2:1                                    | 52.3 m <sup>3</sup> | 68.5 yd <sup>3</sup> |
| Rated Suspended Load                       | 161.0 mt            | 178 st               |
| Optimum Truck Size<br>(400 st truck shown) | 172-363 mt          | 190-400 st           |

\* 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.



## 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.



## 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* | 2x1860 kW      | 1860 kW   | 1860 kW      |
| 15 Sec. Armature Converter Current Rating*         | 3700 amp.      | 3700 amp. | 3700 amp.    |
| Continuous Field Converter Rating*                 | 150 amp.       | 150 amp.  | 150 amp.     |

\* Based on outside ambient temperature of 50°C or 122°F.

\*\* Cascaded hoist converters.

### P&H DIGITAL DC AUTOMATIC REACTIVE POWER COMPENSATION\*

|                | 60 Hz. (7 step)  | 50 Hz. (6 step)  |
|----------------|------------------|------------------|
| Switched Steps | +4725 kVAR Total | +4500 kVAR Total |

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

### P&H DC FAST RESPONSE MAIN MACHINERY MOTORS

|                         |   |                                      |
|-------------------------|---|--------------------------------------|
| Hoist Motor (Two used)  | Continuous rating @ 600 volts<br>Peak developed power | Total 1887kW/2530hp<br>2832kW/3796hp |
| Swing Motor (Two used)  | Continuous rating @ 550 volts<br>Peak developed power | Total 746kW/1000hp<br>1284kW/1721hp  |
| Crowd Motor (One used)  | Continuous rating @ 550 volts<br>Peak developed power | Total 537kW/720hp<br>540kW/724hp     |
| Propel Motor (Two used) | Continuous rating @ 550 volts<br>Peak developed power | Total 716kW/960hp<br>1165kW/1561hp   |



## Power Requirements

|                 |                                   |  |
|-----------------|-----------------------------------|--|
| Supply Voltage* | 7200V or 13800V<br>3 Phase, 60 Hz | 6000, 6600 or 11000<br>3 Phase, 50 Hz. |
|-----------------|-----------------------------------|--|

Supply Transformer (Minimum) 3000 kVA

Minimum Short Circuit VA Available at Shovel 25 MVA

\*Voltage per customer requirements

### TRANSFORMER

|                                 |         |
|---------------------------------|---------|
| Main Armature Transformer       | 2500 VA |
| Auxiliaries-Field Transformer   | 450 kVA |
| Control/Lighting Supply Winding | 50 kVA  |

Note: Transformer capacities may vary depending on options.



## Dipper & Dipper Trip

- P&H 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 P&H technologies. Specific wear packages and GET styles can be cooperatively specified.
- P&H TripRite system utilizes a brushless DC electric motor with sealed planetary drive unit for reliable trip and slack take up operation.



## Hoist

- All gearing housed in single enclosed gear case with filtered oil circulation for reliable splash lubrication and ease of maintenance.
- Large 65" diameter hoist drum for extended rope bending life. Ferrule becket system and dual electric tugger are standard for efficient rope change.
- 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.



## Swing

- Two modular planetary gear cases of proven design and the single piece forged swing gear provide the torque for faster cycle times.
- Spring set air release disc brakes - one per motor.
- Splash lube - optional filtration system.



## Propel

- Two rugged 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 contributing to greater digging time.
- P&H DELTA Drive low tension sprocket drive system with heavy duty cast crawler shoes.
- Spring set air release disc brakes - one per motor.

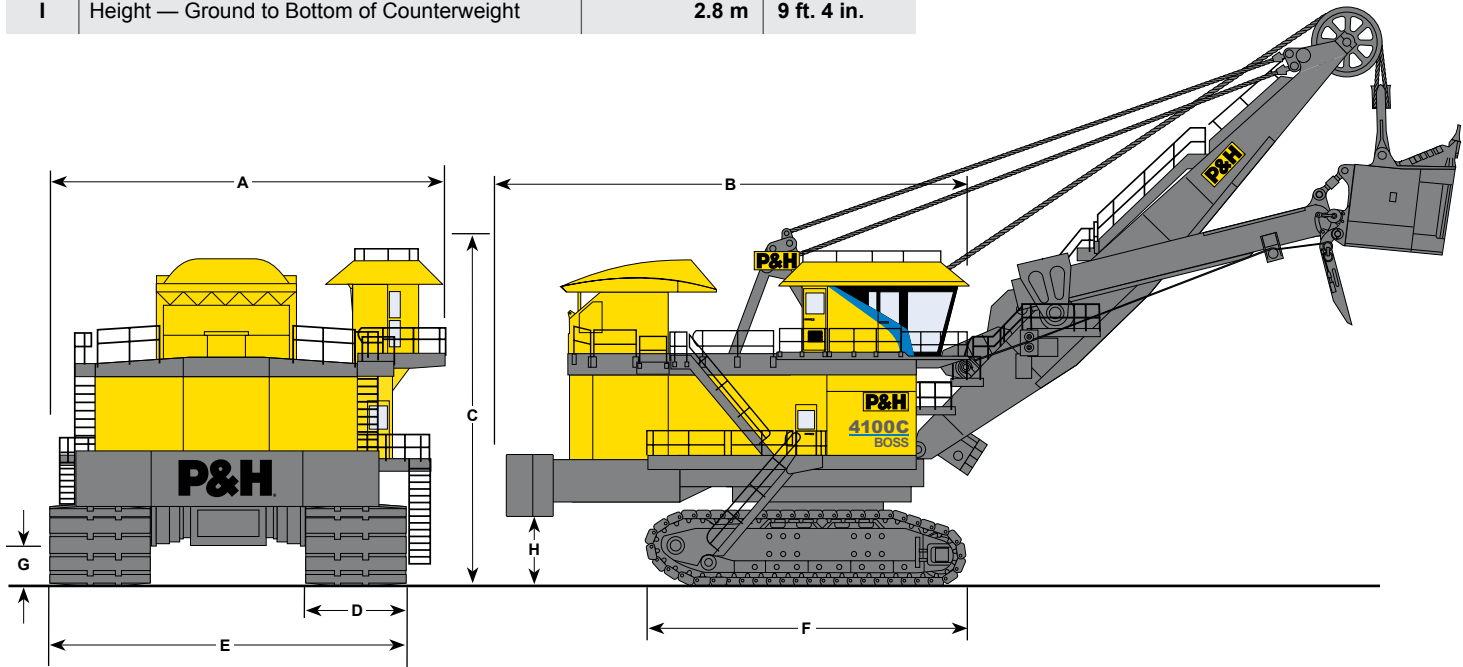


## Cable Data

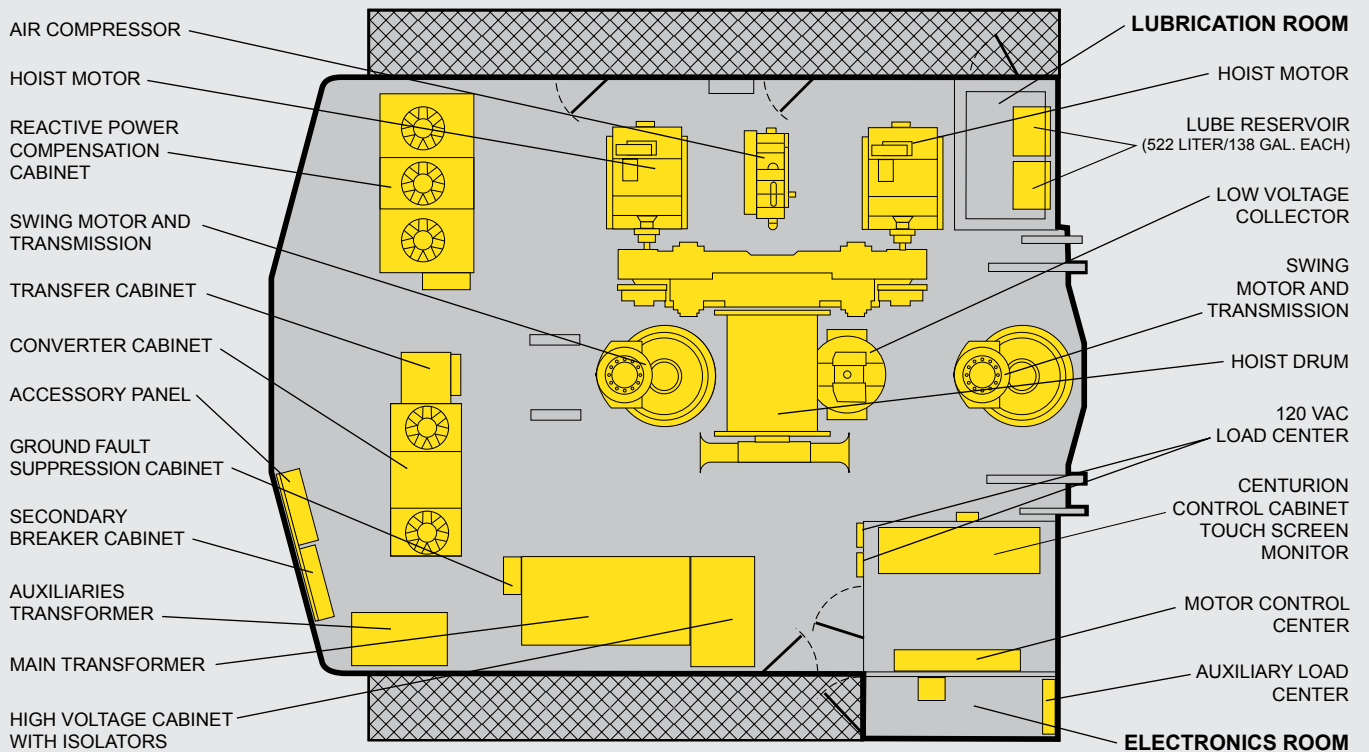
|                            |        |               |
|----------------------------|--------|---------------|
| Hoist (wire rope)          | 70 mm  | 2.75 in. dia. |
| Suspension (bridge strand) | 102 mm | 4.00 in. dia. |
| Dipper Trip (wire rope)    | 19 mm  | 0.75 in. dia. |

## Overall Dimensions

|   |  |         |               |
|---|--|---------|---------------|
| A | Width                                      | 13.2 m  | 43 ft. 0 in.  |
| B | Length                                     | 17.0 m  | 55 ft. 11 in. |
| C | Height Over Gantry                         | 12.7 m  | 41 ft. 8 in.  |
| D | Width of Crawler Shoes                     | 3505 mm | 138 in.       |
| E | Width of Crawlers (std.)                   | 12.8 m  | 41 ft. 11 in. |
| F | Length of Crawlers                         | 11.6 m  | 38 ft. 0 in.  |
| G | Ground Clearance                           | 0.8 m   | 2 ft. 7 in.   |
| I | Height — Ground to Bottom of Counterweight | 2.8 m   | 9 ft. 4 in.   |



## Machinery Deck Plan





## Ground Pressure & Weight

### BEARING AREA - GROUND PRESSURE

Standard:

|   |                         |                        |
|---|-------------------------|------------------------|
| Crawler Bearing Area<br>138" Shoes/ 3505mm    | 625,592 cm <sup>3</sup> | 96,967 in <sup>2</sup> |
| Crawler Ground Pressure<br>138" Shoes/ 3505mm | 2.16 kg/cm <sup>3</sup> | 30.8 psi               |

### WEIGHTS - APPROXIMATE\*

Working Weight

|                             |              |               |
|-----------------------------|--------------|---------------|
| (with Dipper, Approx. Wt.)  | 1,354,200 kg | 2,986,000 lbs |
| Counterweight (Punchings)** | 178,200 kg   | 393,000 lbs   |

\* All weights subject to 5% variation.

\*\* To be furnished by customer.



## Features And Customization

The 4100C BOSS 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, 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 standard shovel can be customized for local and minesite specific conditions in the following areas:

- Operator Cab
- Climate Control
- Cold Weather Equipment
- Technology and Software
- Electrical and Mechanical Systems
- Maintenance Systems



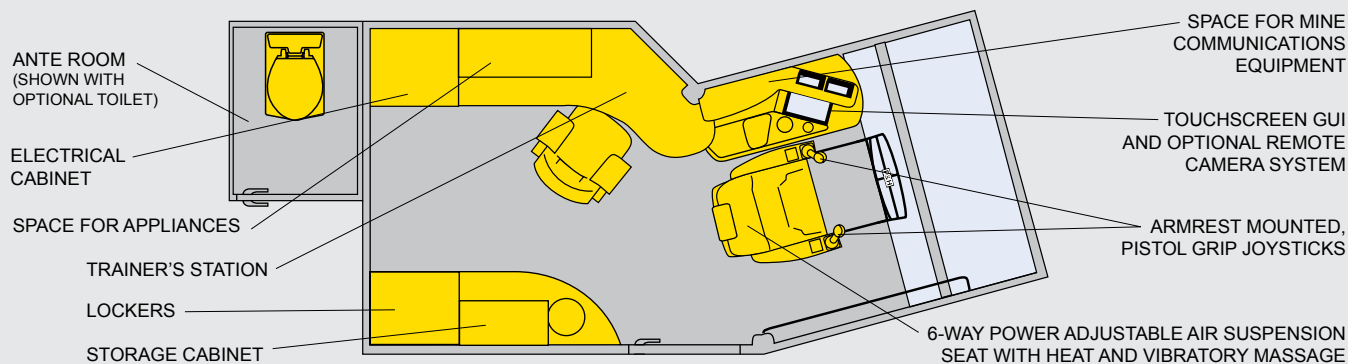
## Lighting

**Standard:** Metal Halide, 400 W, high intensity discharge (HID) primary exterior floodlights (11) mounted on the operator's cab, RH room, LH room and machinery house. Halogen, 500 W secondary exterior floodlights (7) mounted under revolving frame corners, machinery house and above cab door. Fluorescent lights (20) illuminate interior of the machinery house, RH and LH room.

**Optional:** High Pressure Sodium, 400 W or 1000 W primary exterior floodlights. Secondary exterior floodlight combination of Halogen, 500 W (3) and fluorescent lights (6) mounted under revolving frame.



## Loading Control Center



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[www.phmining.com](http://www.phmining.com)

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