With the reliability you need and the flexibility you want, the P&H2650CX Hybrid Shovel offers you technologies with decades of experience, designed into an innovative loading tool to help you maintain productivity with a TCO advantage.

### Operational ranges

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max reach at ground level</td>
<td>14.64 m</td>
<td>48.02 ft</td>
</tr>
<tr>
<td>Max dig reach</td>
<td>17.84 m</td>
<td>58.53 ft</td>
</tr>
<tr>
<td>Operator eye level</td>
<td>8.9 m</td>
<td>29.1 ft</td>
</tr>
<tr>
<td>Max dump height</td>
<td>11.54 m</td>
<td>37.86 ft</td>
</tr>
<tr>
<td>Height of cut</td>
<td>18.11 m</td>
<td>59.42 ft</td>
</tr>
</tbody>
</table>

### Machine overview

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating weight</td>
<td>817,889 kg</td>
<td>1,803,134 lb</td>
</tr>
<tr>
<td>Standard track pads</td>
<td>1626 mm</td>
<td>64 in</td>
</tr>
<tr>
<td>Ground bearing pressure</td>
<td>29.6 N/cm²</td>
<td>43 PSI</td>
</tr>
<tr>
<td>Engine output</td>
<td>2,386 kW</td>
<td>3,200 HP</td>
</tr>
<tr>
<td>Bucket capacity @ 1.9 t/m³</td>
<td>31.1 m³</td>
<td>40.7 yd³</td>
</tr>
<tr>
<td>Rated suspended load</td>
<td>127.5 mt</td>
<td>140.5 st</td>
</tr>
</tbody>
</table>
MTU Detroit diesel engines

- **Model**: 2 x 1724000
- **Type**: 4-cylinder turbocharged
- **Rated power**: 2,386 kW (3,200 HP) @ 1,800 rpm
- **Number of cylinders**: 2
- **Bore**: 170 mm (6.29 in)
- **Stroke**: 210 mm (8.27 in)
- **Displacement**: 57.2 liter (3,491 in³)

Cummins diesel engines

- **Model**: 2 x D5550
- **Type**: 4-cylinder turbocharged
- **Rated power**: 2,386 kW (3,200 HP) @ 1,800 rpm
- **Number of cylinders**: 2
- **Bore**: 159 mm (6.26 in)
- **Stroke**: 192 mm (7.56 in)
- **Displacement**: 50.3 liter (3,085 in³)

SR generators

- Single bearing, force air cooled thru-shaft for driving the hydraulic pump/drive transmission

Main Cooling for engines and Auxiliary Cooling for hydraulic pumps, electrical converters, and hydraulic pump drive transmissions

Hydraulic system

- **Main pumps for clamshell**: 6 variable-displacement, axial piston pumps
- **Maximum oil flow**: 16 x 6,661 L/min
- **Maximum pressure-clamshell**: 320 bar (4,640 PSI)
- **Maximum pressure-converters**: 295 bar (4,314 PSI)
- **Hydraulic system capacity**: 3,785 L/1,000 gal
- **Hydraulic tank capacity**: 2,082 L/550 gal
- **Bucket cylinders**: 2
  - **Bore**: 300 mm
  - **Rod diameter**: 160 mm
- **Tire cylinders**: 2
  - **Bore**: 280 mm
  - **Rod diameter**: 200 mm
- **High pressure in-flow filters**: 25 micron
- **Full flow return line filters (10 double elements)**: 5 x 10 micron
- **Electronic positive pump control system for tilt, ramp, and propel functions**
- **Electronic cylinder end stop cushioning system**
- **Electronically controlled hydraulic oil temperature regulation**

Electrical system

- **System voltage**: 24 V
- **Batteries in series, parallel**: 6 x 12V, 6 x 210Ah
- **Working spot lights**: 22 x high brightness LED lights
- **Service lights**: 16 x LED lights
- **APU unit (optional)**: 24VDC, system (280A)

General specifications

- **Height - ground to carbody**: 25.0 ft
- **Height of crawlers**: 7.24 m
- **Width of crawlers**: 2.38 m
- **Deck height**: 7.48 m
- **Crawler shoe width (standard size)**: 1,626 mm/64 in
- **Ground bearing pressure**: Standard crawler shoe: 1,626 mm/64 in, 29.6 N/mm² /43 PSI
  - Crawler shoe - 1,829 mm/72 in, 26.6 N/mm² /38 PSI
  - Crawler shoe - 1,981 mm/78 in, 24.1 N/mm² /35 PSI
- **Spring-set hydraulic release**: Wet multi plate disc brakes - (1) set per motor
- **Patent P&H brand Delta drive low tension sprocket drive system with heavy duty cast crawler shoes**

Swing system

- **Swing motors**: 4 x P&H SR motors Ø 200 HP each
- **Swing drives**: 4 x stage planetary transmissions
- **Brakes**: Spring loaded / hydraulically released
- **Max swing speed**: 3.12 rpm
- **Slew ring gear**: Sealed triple roller swing ring, internal teeth
- **Switch reluctance (SR) electric motors**: Each coupled with a compact planetary gearbox. Gearbox is oil filled and splash lubricated
- **Spring-set hydraulic release wet multi plate disc brakes (1) set per motor**

Crowd system

- **Crowd motors**: 2 x P&H SR motors Ø 400 HP each
- **Twin low inertia Switch Reluctance (SR) electric motors**: Minimize shock loading
- **Direct drive crowd eliminates belt maintenance and improves responsiveness**
- **Two input pinions shared load for extended life**
- **Dual spring-set hydraulic release brakes for reliable redundant operation**

Hoist system

- **Hoist motors**: 2 x P&H SR motors Ø 1,250 HP each
- **Patent pending dual planetary system located at the interior of the hoist drum eliminates externally mounted transmissions and optimizes use of deck space**
- **All gearing and bearings are bushed with filtered oil, providing reliable operation and eliminating the need for a heat exchanger**
- **Large 68" diameter drum for extended rope bending life. Female becket system and dual hydraulic duggers are standard for efficient rope change**
- **Spring-set hydraulic release wet multi plate disc brakes (1) set per motor**

Overall dimensions

- **Engine to boom point length**: 21.0 m / 68.8 ft
- **Counterweight to center of turntable**: 7.48 m / 24.54 ft
- **Height - ground to bottom of counterweight**: 2.38 m / 7.81 ft
- **Height of crawler beams**: 3.69 m / 12.1 ft
- **Deck height**: 2.14 m / 7.0 ft
- **Width of crawler**: 7.6 m / 25.0 ft
- **Counterweight to boom point length**: 3.12 m / 10.2 ft
- **Rope radius**: 2.38 m / 7.81 ft

Machinery house layout

- **Benz seat**: 1.99 km/hr / 1.24 mph (high)
- **Travel speeds**: 0.92 km/hr / 0.57 mph (low)
- **Hydraulic motors**: 2 - axial piston variable motors (per side)
- **Propel system**:
  - **Main pumps**: 6 variable-displacement, axial piston pumps
  - **Converter cabinet**: 3
- **Engine radiator**: Single bearing, force air cooled thru-shaft for driving the hydraulic pump/drive transmission
- **Gearboxes with hydraulic pumps**: Single bearing, force air cooled thru-shaft for driving the hydraulic pump/drive transmission
- **Valve bank**: Single bearing, force air cooled thru-shaft for driving the hydraulic pump/drive transmission
- **Auxiliary radiator**: Single bearing, force air cooled thru-shaft for driving the hydraulic pump/drive transmission
- **Converter cabinet**: Single bearing, force air cooled thru-shaft for driving the hydraulic pump/drive transmission
Control system–LINCS II

LINCS II
Microprocessor based modular design Vehicle Control Unit with monitoring and diagnostics including integrated data logging and storage

LINCS II uses a dash mounted full color touchscreen display as the operator interface: out of range conditions will cause an audible alarm along with a message screen that is color coded to indicate severity.

In addition, the touch-screen display provides repair technicians with operational data and fault messages.

Operator’s cab

<table>
<thead>
<tr>
<th>Internal cab dimensions</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>2,450 mm (96.5 in)</td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>1,845 mm (72.5 in)</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>2,320 mm (91.3 in)</td>
<td></td>
</tr>
</tbody>
</table>

Fall-Object Protective Structure (FOPS) ISO 3449

Internal cab noise
(high idle with AC on high) 74 dBA

Air conditioner
5.25 kW - 18k Btu/hr
10.5 kW - 36k Btu/hr

Heater
14.6 kW - 50k Btu/hr

Fluid capacities

<table>
<thead>
<tr>
<th>Fluid type</th>
<th>Volume (L)</th>
<th>Volume (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>8,574</td>
<td>2,265</td>
</tr>
<tr>
<td>Engine oil</td>
<td>2 x 190</td>
<td>2 x 50</td>
</tr>
<tr>
<td>RH/LH engine high temp coolant</td>
<td>1,317</td>
<td>348</td>
</tr>
<tr>
<td>RH/LH engine low temp coolant</td>
<td>639</td>
<td>169</td>
</tr>
<tr>
<td>MPG tank</td>
<td>235</td>
<td>62</td>
</tr>
<tr>
<td>OGL tank</td>
<td>575</td>
<td>152</td>
</tr>
<tr>
<td>Hydraulic oil tank</td>
<td>2,082</td>
<td>550</td>
</tr>
<tr>
<td>RH pump drive transmission</td>
<td>63</td>
<td>16</td>
</tr>
<tr>
<td>LH pump drive transmission</td>
<td>58</td>
<td>15</td>
</tr>
<tr>
<td>Propel gearcase</td>
<td>2 x 227</td>
<td>2 x 60</td>
</tr>
<tr>
<td>Swing gearcase</td>
<td>4 x 76</td>
<td>4 x 20</td>
</tr>
<tr>
<td>Crowd gearcase</td>
<td>530</td>
<td>140</td>
</tr>
<tr>
<td>Hoist gearcase</td>
<td>515</td>
<td>136</td>
</tr>
</tbody>
</table>

Clamshell bucket

<table>
<thead>
<tr>
<th>Nominal Payload</th>
<th>59 mt</th>
<th>65 st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard HD bucket @ 1.9t/m³ (2:1 heaped)</td>
<td>31.1 m³</td>
<td>40.7 yd³</td>
</tr>
<tr>
<td>Lip width</td>
<td>5,080 mm</td>
<td>200 in</td>
</tr>
<tr>
<td>Weight without wear package</td>
<td>67,719 kg</td>
<td>149,294 lb</td>
</tr>
<tr>
<td>Weight with wear package</td>
<td>70,105 kg</td>
<td>154,554 lb</td>
</tr>
<tr>
<td>Overburden bucket</td>
<td>36 m³</td>
<td>47.1 yd³</td>
</tr>
<tr>
<td>Iron ore bucket</td>
<td>27.1 m³</td>
<td>35.4 yd³</td>
</tr>
</tbody>
</table>

Service station

Ground level service station
Fuel
Engine oil
Engine coolant (RH)
Multi purpose grease
Open gear lube
Hydraulic oil

LH deck service station
Converter cooler
Engine coolant (LH)

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