PC4000-6
Super Shovel

OPERATING WEIGHT
385-397 ton
850,000-875,000 lb

SHOVEL CAPACITY
22 m³ 29 yd³ SAE 2:1 heaped

BACKHOE CAPACITY
22 m³ 29 yd³ SAE 1:1 heaped

Photo may include optional equipment.
Komatsu Technology and Expertise
• Quality management ISO 9001 certified
• Environmental Management
  ISO 14001 certified
• High, consistent quality
  through continuous investment
  in personnel, design and
  manufacturing systems and processes

Advanced Hydraulics
Extended reliability and control
• Electronic pump management
• Comprehensive monitored filtration
• Simple open-circuit hydraulic system with high
  efficiency swing-out oil coolers

Reliability and Durability
Designed for lower operating costs
• Robust structural design developed
  from field experience and finite
  element analysis
• Extended life undercarriage wear parts
• Large diameter rollers, idlers and sprockets
• Large surface contact area with extensive
  precision hardening reduces wear
• Hardened track link pin bores

Productivity
Designed for more tons per hour
• Powerful digging forces
• Easy bucket filling
• Proven attachment design
• All cylinders mounted under the shovel
  attachment for additional protection
• Buckets and Wear Packages to suit all
  material densities and ground conditions
**Large Comfortable Cab**
Provides full shift comfort
- Komatsu low noise cab on multiple viscous mounts for reduced noise and vibration
- Large volume cab with full view front window (floor to ceiling) increases operator view
- Comprehensive climate control with pressurized, filtered air ventilation and air conditioning
- High specification multi-adjustable air suspension seat, redesigned for mining
- Well elevated operator position provides superior all around view

**Powerful Diesel Engine**
Komatsu SDA16V160 engine
- Rated 1400 kW **1875 HP**, at 1800 rpm
- Electronic engine management
- Low engine emission levels – meets EPA Tier 2 emission regulations
- Time saving oil management system as standard equipment; Centinel Engine Oil Management, Engine Reserve Oil Supply and Eliminator Oil Filter systems

**Easy Maintenance**
Simple, common-sense design gives quick, easy access to all major components
- Hydraulically operated ground access ladder
- Generous access to all major service points from machinery house floor level
- Enclosed, internally lit machinery house with wall separating engine from pump area
- Automatic central lubrication
- Vehicle Health Monitoring System (VHMS) provides real-time information about the operating systems of the machine
- Ground-level access to hydraulically operated drop-down service center with Wiggins connections
### SPECIFICATIONS

#### DIESEL DRIVE
- **Model**: Komatsu SDA16V160
- **Type**: 4-cycle, water-cooled, direct injection
- **Aspiration**: Turbocharged and aftercooled
- **Number of cylinders**: 16
- **Rated power**: 1,400 kW, 1,875 HP @ 1800 rpm (SAE 1995/J1349)
- **Governor**: All-speed, electronic

The integrated engine oil and filter system combining the oil stabilizing systems, Reserve and Centinel, with the Eliminator self cleaning oil filter extends, with oil analysis, the oil change interval to 4000 hours. (not available in Australia)

#### ELECTRICAL SYSTEM
- **System**: 24 V
- **Batteries (series/parallel)**: 2 x 3 x 12 V
- **Alternator**: 260 A
- **Standard working lights**: 8 Xenon lights
- **Standard service lights**: 11 lights

#### HYDRAULIC SYSTEM
The power train consists of one main drive. Diesel engine or electric motor can be supplied. One gearbox drives four identical main pumps which draw hydraulic oil from an unpressurized hydraulic tank. Open circuit hydraulics provide maximum cooling and filtering efficiency.

- **Rated flow (total output)**: 4140 ltr/min, 1,096 U.S. gpm
- **Relief valve setting**: 310 bar, 4,495 psi
- **Swing flow rate**: 1590 ltr/min, 420 U.S. gpm
- **High pressure in-line filters**: 200 micron (one per pump located at the valve blocks)
- **Full flow return line filters** (8 double elements): 10 micron (at head of hydraulic tank)
- **Case drain/by-pass return line filters**: 3 micron

The four-circuit system features a load-limiting governor with oil delivery summation to the working circuits and incorporates pressure cut-off control. Hydropilot prioritizes hydraulic flow giving smooth hydraulic response, simple hydraulic system layout, and a reduced number of components. The hydraulic system includes four large swing-out vertical air-to-oil hydraulic coolers with temperature-regulated hydraulically driven fans.

#### Drives and Brakes
- **Travel control**: 2 foot pedals
- **Gradeability**: Up to 50%
- **Travel speed (maximum)**: 2.1 km/h, 1.3 mph
- **Service brake**: Hydraulic
- **Parking brake**: Wet, multiple-disc

#### Swing System
- **Hydraulic motors and drives**: 2
- **Swing brake, service**: Hydraulic
- **Swing brake, parking**: Wet, multiple-disc
- **Swing ring teeth**: External
- **Swing speed (maximum)**: 4.0 rpm

#### COOLING SYSTEM
The high capacity engine radiators are cooled by hydraulically driven fans for superior cooling efficiency and require little maintenance. The hydraulic system includes two large swing-out vertical air-to-oil hydraulic coolers with temperature-regulated hydraulically driven fans.

#### Electric Drive
- **Type**: Squirrel-cage induction motor
- **Power output**: 1350 kW
- **Voltage**: 6600 V
- **Amperage (approximate)**: 145 A
- **Start-up**: Soft start
- **Frequency (standard)**: 50 Hz @ 1500 rpm
- **Optional frequency**: 60 Hz @ 1800 rpm

*Other voltages available on request

#### Undercarriage
Undercarriage consists of one center carbody and two track frames, each side attached by 62 high torque bolts.

- **Center frame**: H-type
- **Track frame**: Steel box-section
- **Track adjustment**: Automatic hydraulic type
- **Number of shoes**: 49 each side
- **Number of top rollers**: 3 each side
- **Number of bottom rollers**: 7 each side

#### Automatic Centralized Lubrication
Two hydraulically powered Lincoln single line automatic lubrication systems are provided as standard, complete with time and volume variable controls. Activity and malfunction events are linked to the Vehicle Health Monitoring System (VHMS). The central lube grease system is supplied from a refillable 200 liter 53 gal. barrel. A second, identical system supplies open gear lubricant to the swing ring teeth through a lube pinion. Replenishment of the barrels is through the service center.

#### Service Refill Capacities
- **Hydraulic oil tank**: 3900 ltr, 1,030 U.S. gal
- **Hydraulic system**: 5900 ltr, 1,559 U.S. gal
- **Fuel**: 6400 ltr, 1,691 U.S. gal
- **Engine coolant**: 475 ltr, 125 U.S. gal
- **Engine oil**: 290 ltr, 77 U.S. gal
- **Centinel engine oil make up tank**: 460 ltr, 122 U.S. gal

#### Cab
The large welded steel cab is mounted with 18 viscous damping pads and sound insulated. It is equipped with automatic climate control and is pressurized. The operator’s seat is fully adjustable, air suspended, electrically heated and has a lap seat belt. There is a trainer’s seat.

- **Low effort joystick controls** are electric over hydraulic and foot controls are for front shovel claw, crawler and swing brake.
- **Full instrumentation** and Vehicle Health Monitoring System (VHMS) are provided. Space in the console is provided for an additional monitor.

Cab engineering standards are:
- ISO 3449 Falling Objects Protection Structure (FOPS) Level 2
- ISO 6396 Noise in operator’s cab is 73dB(A)
- ISO 2631-1/5349-1 Vibration and Shock
- **Air conditioner**: 10 kW, 34,120 Btu/hr
- **Heater/Defroster (Diesel version)**: 10 kW, 34,120 Btu/hr

*Other voltages available on request
VEHICLE MONITORING SYSTEM

Vehicle Health Monitoring System (VHMS) is designed for Komatsu mining equipment to provide real-time and stored information about the operating systems of the machine. A touch-sensitive flat screen color monitor gives a continuous display or can be activated to provide operator or service data. Non-serious and critical faults are automatically announced, while for major malfunctions the engine is also shut down. The integrated digital storage provides a full event history, which can be downloaded by laptop computer or by wireless link. The ability to provide real-time service information as messages, snap-shot or trend data automatically to mine control programs can improve mechanical utilization and reduce costs.

(Electric drive version fitted with Electronic Control System (ECS) Health Monitor)

DIMENSIONS

BASIC MACHINE WITH COUNTERWEIGHT

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1200 mm</td>
<td>47&quot;</td>
<td>H</td>
</tr>
<tr>
<td>B</td>
<td>1500 mm</td>
<td>59&quot;</td>
<td>I</td>
</tr>
<tr>
<td>C</td>
<td>6750 mm</td>
<td>22’2&quot;</td>
<td>J</td>
</tr>
<tr>
<td>D</td>
<td>7050 mm</td>
<td>23’2&quot;</td>
<td>K</td>
</tr>
<tr>
<td>E</td>
<td>2480 mm</td>
<td>8’2&quot;</td>
<td>L</td>
</tr>
<tr>
<td>F</td>
<td>3380 mm</td>
<td>11’1&quot;</td>
<td>M</td>
</tr>
<tr>
<td>G</td>
<td>6700 mm</td>
<td>22’0&quot;</td>
<td>N</td>
</tr>
<tr>
<td>G</td>
<td>8842 mm</td>
<td>29’0&quot;</td>
<td>O</td>
</tr>
</tbody>
</table>

Ground Clearance: 930 mm 3’0"

OPERATING WEIGHTS (APPROXIMATE)

PC 4000 Backhoe:
Operating weight including 9750 mm 32’0” boom, 4500 mm 14’9” stick, 22 m³ 29 yd³ backhoe bucket, operator, lubricant, coolant, full fuel tank and standard equipment.

<table>
<thead>
<tr>
<th>Shoe Width</th>
<th>Operating Weight</th>
<th>Ground Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 mm</td>
<td>392 t</td>
<td>2.19 kg/cm²</td>
</tr>
<tr>
<td>47&quot;</td>
<td>865,000 lb</td>
<td>31.2 psi</td>
</tr>
<tr>
<td>1500 mm</td>
<td>397 t</td>
<td>1.78 kg/cm²</td>
</tr>
<tr>
<td>59&quot;</td>
<td>875,000 lb</td>
<td>25.3 psi</td>
</tr>
</tbody>
</table>

PC 4000 Front Shovel:
Operating weight including 7150 mm 23’6” boom, 4900 mm 16’1” stick, 22 m³ 29 yd³ shovel bucket, operator, lubricant, coolant, full fuel tank and standard equipment.

<table>
<thead>
<tr>
<th>Shoe Width</th>
<th>Operating Weight</th>
<th>Ground Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 mm</td>
<td>385 t</td>
<td>2.15 kg/cm²</td>
</tr>
<tr>
<td>47&quot;</td>
<td>850,000 lb</td>
<td>30.6 psi</td>
</tr>
<tr>
<td>1500 mm</td>
<td>390 t</td>
<td>1.75 kg/cm²</td>
</tr>
<tr>
<td>59&quot;</td>
<td>860,000 lb</td>
<td>24.8 psi</td>
</tr>
</tbody>
</table>

Explanation

1. Operator’s Cab
2. Power Train
3. Hydraulic Pumps
4. Hydraulic Tank
5. Hydraulic Coolers
6. Valve Blocks
7. Swing Motor
8. Fuel Tank
9. Counterweight
10. Autolube System
11. Secondary Egress
### PRODUCTIVITY FEATURES

**BACKHOE BUCKET, STICK AND BOOM COMBINATION**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Measurement</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boom length</td>
<td>9750 mm</td>
<td>32'0&quot;</td>
</tr>
<tr>
<td>Stick length</td>
<td>4500 mm</td>
<td>14'9&quot;</td>
</tr>
<tr>
<td>Break-out force (SAE)</td>
<td>1155 kN</td>
<td>260,000 lb</td>
</tr>
<tr>
<td>Tear-out force (SAE)</td>
<td>1050 kN</td>
<td>236,000 lb</td>
</tr>
<tr>
<td>Max. digging depth (at ground level)</td>
<td>8000 mm</td>
<td>26'3&quot;</td>
</tr>
<tr>
<td>Max. digging reach at ground level</td>
<td>16650 mm</td>
<td>54'8&quot;</td>
</tr>
</tbody>
</table>

### Bucket Capacity

<table>
<thead>
<tr>
<th>Bucket Capacity (Heaped 1:1) SAE</th>
<th>m³</th>
<th>yd³</th>
<th>Width</th>
<th>Teeth qty</th>
<th>Weight</th>
<th>Max. Material Density (Loose)</th>
<th>Wear Package</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>mm</td>
<td>ft and in</td>
<td>t</td>
<td>t/m³</td>
<td>lb</td>
</tr>
<tr>
<td>22</td>
<td>29</td>
<td>3790</td>
<td>12'5&quot;</td>
<td>6</td>
<td>23.4</td>
<td>51,590</td>
<td>1.8</td>
</tr>
</tbody>
</table>

*Weight includes Backhoe Bucket, Stick and Boom Combination

Alternative buckets on request

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**PC4000-6 HYDRAULIC SHOVEL**
### SHOVEL BUCKET, STICK AND BOOM COMBINATION

**Boom length** | 7150 mm | 23’6”
---|---|---
**Stick length** | 4900 mm | 16’1”
**Break-out force (SAE)** | 1250 kN | 280,000 lb
**Crowd force (SAE)** | 1330 kN | 300,000 lb

**Max. dumping height** | 12000 mm | 39’4”
**Level crowd at ground level** | 5700 mm | 18’8”

<table>
<thead>
<tr>
<th>Bucket Capacity</th>
<th>Width</th>
<th>Teeth</th>
<th>Weight*</th>
<th>Max. Material Density (Loose)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE/CECE Heaped 2:1</td>
<td>m³</td>
<td>yd³</td>
<td>mm</td>
<td>ft and in</td>
</tr>
<tr>
<td>Heaped 1:1</td>
<td>m³</td>
<td>yd³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>29</td>
<td>25</td>
<td>32.7</td>
<td>4020</td>
</tr>
</tbody>
</table>

* Weight includes Shovel Bucket, Stick and Boom Combination

Alternative buckets on request
Hydraulic Mining Shovel with Diesel Drive will comprise:

- **FRONT SHOVEL ATTACHMENT**
  7.15 m 23'6" boom and 4.9 m 16'1" stick complete with cylinders. 22 m³ 29 yd³ (SAE 2:1) shovel bucket with mechanical teeth and lip system.

  OR

- **BACKHOE ATTACHMENT**
  9.75 m 32'0" boom and 4.5 m 14'9" stick with 22 m³ 29 yd³ (SAE 1:1) bucket.

- **CRAWLER UNDERCARRIAGE**
  Heavy-duty shovel type undercarriage consisting of a center carbody and 2 heavy box-type track frames, each having 7 bottom rollers, 3 top rollers, and 1200 mm 47" cast steel track shoes. Hydraulic track adjustment and parking brake provided.

- **SUPERSTRUCTURE**
  Main frame mounted over an externally toothed swing circle carries the main drive module, including Komatsu SDA16V160 diesel engine, oil and fuel reservoirs, counterweight, operator’s cab and base.

- **LIGHTING**
  8 Xenon high performance working lights. 11 service lights throughout platform.

- **OPERATOR’S CAB**

- **LUBRICATION**
  LINCOLN central lubrication for basic machine, attachment, and bucket. 200 ltr 53 gal refillable barrel from service center.
  LINCOLN automatic pinion lubrication system for swing circle teeth with 200 ltr 53 gal refillable barrel from service center.
  Service center (diesel version only as standard) on hydraulic arm carrying WIGGINS fluid receiving connectors for filling of fuel, engine oil and coolant, hydraulic oil, grease, cabwater and the evacuation of coolant, and hydraulic and engine oils.

- **ACCESSORIES**
  Acoustic travel alarm
  Hydraulically actuated ground access ladder
  Electric air horn
  Emergency stops, ground level
  Engine oil management system (Centinel, Reserve & Eliminator Systems)

- **STANDARD EQUIPMENT**
  Arm cylinder sliding guard
  Boom cylinder sliding guard
  Bucket, 13.5 m³ 17.7 yd³
  Handrails and step, boom
  Wear package #1, bucket
  Wear package #2, bucket
  Wear package #4, bucket

- **OPTIONAL EQUIPMENT**
  1500 mm 59" track shoes
  Additional cab heater, -15°C 5°F
  Cable reel (Electric Version)
  Drive motor protection, top
  Electric drive
  Fire suppression and detection system
  Kim Hotsart
  Lighting, extra or alternative
  Low temperature package
  Material for -40°C -40°F spec
  Oil for -25°C -13°F to +15°C 59°F
  Oil for +5°C 41°F to +55°C 131°F
  Oil for Arctic, -40°C -40°F to +10°C 50°F
  Protection, drive motor
  Rotoflare warning light
  Special painting and lettering
  Water separator

- **FRONT SHOVEL ATTACHMENT**
  Arm cylinder sliding guard
  Boom cylinder sliding guard
  Bucket, 13.5 m³ 17.7 yd³
  Handrails and step, boom
  Wear package #1, bucket
  Wear package #2, bucket
  Wear package #4, bucket

- **BACKHOE ATTACHMENT**
  Bucket, 31.3 m³ 41 yd³
  Bucket cylinder sliding guard
  Handrails and step, boom
  Wear package #1, bucket
  Wear package #3, bucket