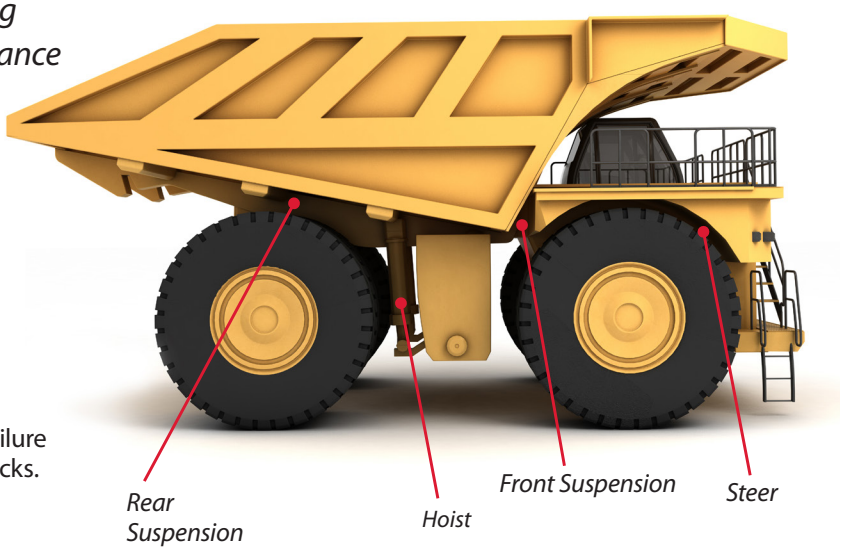
# CHESTERTON® MOBILE MINING SEALING SOLUTIONS FOR MINING TRUCKS

## IMPROVE MINING TRUCK UPTIME: IMPACT OF SEALING STRATEGIES ON PERFORMANCE

*Large mining trucks are critical to surface mining operations with the need for extended maintenance intervals. Hydraulic cylinders, whether used on suspension, steering, or hoists are subject to significant pressure and shock loads. Mitigating these common hydraulic setbacks are crucial for continued truck operation.*




## Challenge

**Issue**

A large surface copper mine experienced pre-mature seal failure on the suspension cylinders of heavy-duty, off-road haul trucks.

The suspension system was exposed to severe operating conditions including a heavy payload, shock load, and high frequency. Cylinders with an OEM seal repair kit lasted only 6,000 to 8,000 hours.

The challenge was to extend the operating hours between maintenance intervals of the shock absorbers and use existing metallic components for repair/upgrade of the cylinders.

## Solution

**Recommendation**

A Chesterton specialist recommended a cylinder upgrade solution–a complete system with high-performance components.

**Seal Materials:** Proprietary thermoset polymer (AWC800) provided outstanding wear, abrasion and extrusion resistance. AWC640 is a high-load capacity, non-metallic, bearing composite material.

**Seal Kit:** Included wiper, primary rod seal (cap seal), secondary rod seal (u-cup), and rod bearing bands.

## Results

**Improved Performance and Reliability**

Rebuild cycle: Extended from 6,000 to 8,000 working hours up to 12,000 hours.

**MTBR Improvements: 1.5 – 2X**

Immediate cost saving by using existing metallic components for upgrade of the cylinders.

### The Chesterton Advantage

- Extend equipment service life and reliability.
- Reduce maintenance costs and downtime.
- Improve equipment productivity and efficiency.

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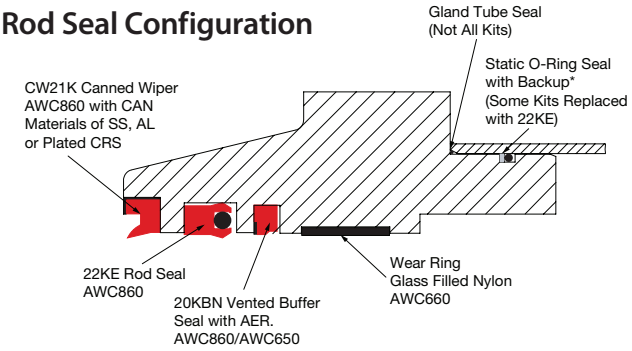
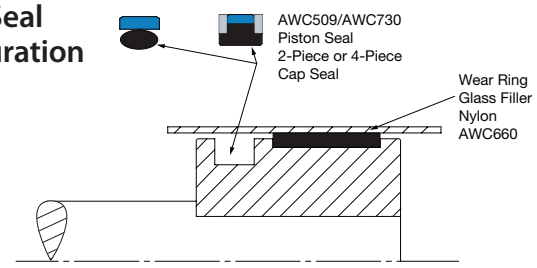
## Rod Seal Configuration




*Some kits have two sets of O-Rings due to groove design change from 200 to 300 series O-Rings.

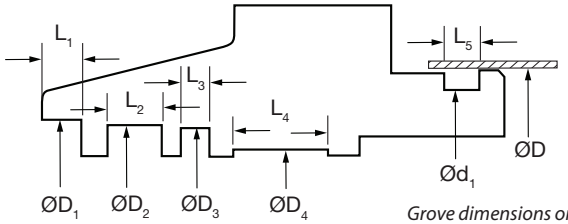
## Piston Seal Configuration




**Customer:** _____
Machine Model: _____
Cylinder Function: _____
Rod Diameter: _____
Bore Diameter: _____

## Rod Dimensions

*Cylinder measurements for steering and hoist cylinder to be recorded for orders.*

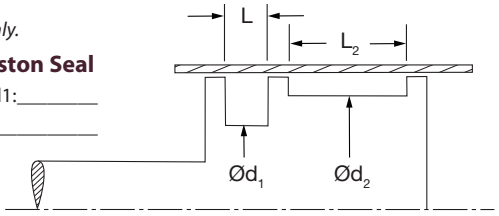



*Grove dimensions only.*

| Wiper | Rod Seal | Buffer Seal | Rod Wear Ring | Static Seal |
|---|---|---|---|---|
| ØD1: _____ | ØD2: _____ | ØD3: _____ | ØD4: _____ | Ød1: _____ |
| L1: _____ | L2: _____ | L3: _____ | L4: _____ | ØD: _____ |
| | | | | L5: _____ |

## Piston Dimensions

*Grove dimensions only.*




| Piston Wear Ring | Piston Seal |
|---|---|
| Ød2: _____ | Ød1: _____ |
| L2: _____ | L: _____ |

### Technical Specifications

Most common seal profiles and materials.

| Seal Type | Recommended Profile | Recommended Material | Benefits |
|---|---|---|---|
| Canned Wiper | CW21K | AWC860/SS/CRS/AI | Interference press fit design for open grooves and space saving. Excellent single acting abrasion resistant design to help prevent contaminants from entering the equipment. |
| Rod Seal | 22KE | AWC860 (High Temperature EU – 250˚F) | O-Ring energized high pressure and temperature abrasion resistant design. |
| Piston Seal | CCS | AWC509/AWC730 Bronze Moly PTFE/FKM | High strength material for bi-directional sealing. Compression seal design increases sealing force with system pressure. |
| Static Seals | O-Ring with BUR or 22KE | NBR 90A BUR: Urethane/AWC860 | High performance O-Ring upgrade with high temperature material. |
| Wear Bands | WR | AWC660 40% Glass Filled Nylon | Precision machined high compressive strength replaceable design to prevent metal to metal contact. |
| Buffer Seal | 20KBNAER | AWC860/AWC650 BUR | Buffer seals with backup ring to minimize the impact of shock loads on the rod seals. |
| **Truck Suspension Cylinders (Rear and Front)** | | | |
| Canned Wiper | CW21K | AWC860/SS/CRS/AI | Interference press fit design for open grooves and space saving. Excellent single acting abrasion resistant design to help prevent contaminants from entering the equipment. |
| Rod Seal | 22KE | AWC860 (High Temperature EU – 250˚F) | O-Ring energized high pressure and temperature abrasion resistant design. |
| Static Seals | O-Ring with BUR or 22KE | Rear + Front: NBR 90A BUR: Urethane/ AWC860 For Front Suspension: Add Grease Seals (Rod Seal) 22KE AWC860 | High performance O-Ring upgrade with high temperature material. |
| Wear Bands | WR | AWC660 40% Glass Filled Nylon | Precision machined high compressive strength replaceable design to prevent metal to metal contact. |

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05/24