

**SPECIFICATION FOR
ENCLOSED GEARCASE LUBRICANT**

Applicable to Models 495BII, 495HF, 495HR and 495HD Electric Mining Shovels.

(September 1, 2005)

SCOPE:

This specification covers the requirements for “Enclosed Gearcase Lubricant” used on models 495BII, 495HF, 495HR and 495HD Electric Mining Shovels.

The materials furnished under this specification are intended to lubricate spur, helical and spiral bevel gears as well as anti-friction bearings at the interior of enclosed planetary and non-planetary type gearcases (Hoist, Swing, Crowd and Propel).

This specification covers “Enclosed Gearcase Lubricants” that may be applied in service at temperatures ranging from -50°C (-58°F) to the highest ambient temperature conditions.

GUIDELINES FOR SELECTING AN APPROVED LUBRICANT:

Step #1

Using Table 1, determine the recommended oil type (Mineral or Synthetic) based upon the anticipated ambient temperature range.

AMBIENT TEMPERATURE RANGE:

Ambient Temperature: The ambient temperature is defined as the air temperature in the immediate vicinity of the gearcase.

- a. Use atmospheric temperature for gearcases located outside of the machinery house (Swing, Crowd and Propel Gearcases).
- b. Use machinery house temperature for gearcases located inside of the machinery house (Hoist Gearcase) for some machines are equipped with machinery house heaters.
- c. If the ambient starting temperature approaches the lubricant pour point, external heaters may be required to facilitate starting and insure proper lubrication. Use oil temperature for gearcases having oil immersion heaters.



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Table 1

Ambient Temperature Range	ISO Viscosity Grade / Oil Type
14°F to 100°F (-10°C to 37°C)	ISO VG 320 / Mineral or Synthetic (poly- α -olefin) Oil
Less than 14°F to 120°F (Less than -10°C to 50°C)	ISO VG 320 / Synthetic (poly- α -olefin) Oil

Under normal circumstances, an ISO VG 320 oil viscosity is required for all Gearcases (Hoist, Swing, Crowd and Propel). For cold weather applications, an ISO VG 220 oil viscosity may be used for the Propel Gearcases to help ensure that the lubricant pour point remains below that of the ambient starting temperature. The pour point and flash point of individual brand name gear oils must be observed. Refer to the oil manufacturers technical data sheets for these properties.

Step #2

Select an approved lubricant for the Hoist, Swing, Crowd and Propel Gearcases from the Approved Lubricant Tables 2 & 3.

APPROVED LUBRICANTS:

Lubricants that have been approved for use by the Gearcase manufacturers are listed in the Approved Lubricant Tables 2 & 3. The use of non-approved lubricants may invalidate the Bucyrus International, Inc. product warranty obligation.

Specific product selection is the responsibility of the equipment operator/owner and is dependent on climate, application, performance and regional/regulatory requirements.

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Table 2
Approved Mineral Oil Lubricants (ISO VG 320)

Manufacturer	Product Description
BEL-RAY	Bel-Ray 100 Gear Oil 90
BP	Energol GR-XF 320
CASTROL	Alpha SP 320
	Alpha MAX 320
	Optigear BM 320
	Tribol 1100/320
CHEVRON	Chevron Ultra Gear Lube 320
	Gear Compound EP 320
ESSO	Spartan EP 320 (Only Product Originating from Europe)
FUCHS	Renolin CLP 320 Plus
LE (Lubrication Engineers)	Almasol 605
MOBIL	Mobilgear XMP 320
PETRO CANADA	Ultima EP 320
SHELL	Omala F 320
TEXACO	Auriga EP 320
	Meropa 320
	Meropa WM 320
WHITMORE	Paragon 320

- Shaded lubricants are approved for use in the Planetary Hoist, Swing and Propel Gearcases as well as the Non-Planetary type Crowd Gearcase.
- Non-shaded lubricants are approved for use only in the Planetary Propel and Non-Planetary type Crowd Gearcase.



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Table 3
Approved Synthetic (Poly- α -olefin) Oil Lubricants (ISO VG 320)

Manufacturer	Product Description
BEL-RAY	Synth. Gear Oil 6692
BP	Enersyn EP-XF 320
	Enersyn HTX 320
CASTROL	Optigear Synth. A 320
	Optigear Synth. X 320
	Alphasyn EP 320
	Alphasyn T 320
	Tribol 1510/320
	Tribol 1710/320
CHEVRON	Tegra Synth. Gear Lube 320
FUCHS	Renolin Unisyn CLP 320
MOBIL	Mobil SHC 632
	Mobilgear SHC XMP 320
PETRO CANADA	Ultima Synth. EP 320
	Traxon E Synth. 80W-140
SHELL	Omala HD 320
TEXACO	Pinnacle EP 320
WHITMORE	Decathlon F 320

- Shaded lubricants are approved for use in the Planetary Hoist, Swing and Propel Gearcases as well as the Non-Planetary type Crowd Gearcase.
- Non-shaded lubricants are approved for use only in the Planetary Propel and Non-Planetary type Crowd Gearcase.

SPECIFICATION REVISIONS:

This specification is subject to change without notice. Please refer to the Bucyrus International, Inc. web site www.bucyrus.com for the latest specification.