Product: SKID STEER LOADER
Model: 262D SKID STEER LOADER DTB
Configuration: 262D Skid Steer Loader DTB00001-UP (MACHINE) POWERED BY C3.3B Engine

Disassembly and Assembly
Seal Installation

Media Number -UENR3262-00 **Publication Date -01/11/2018** **Date Updated -30/10/2012**

i04966249

Duo-Cone Seals - Install

SMCS - 7561-012

DUO CONE SEALS

Illustration 1 g03150736

Background

To reduce the risk of leaks or failures, assemble the duo cone seals correctly. This document applies to cast, formed, conventional, and inverted Duo-Cone seals and to installations on factory assembly lines, at dealer shops, and in the field.

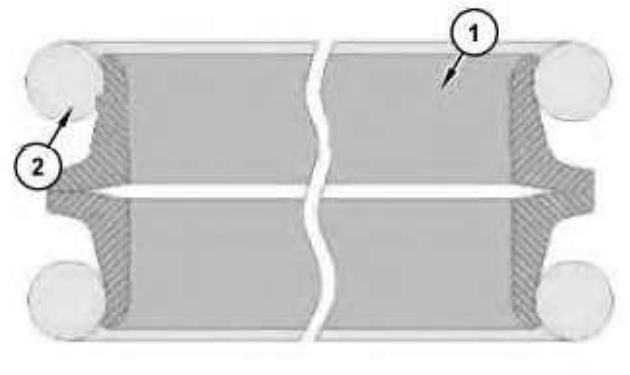

Illustration 2 g03150396

Duo-Cone seal
(1) Seal ring
(2) Rubber toric

The two main components of a Duo-Cone seal are shown in Illustration 2.

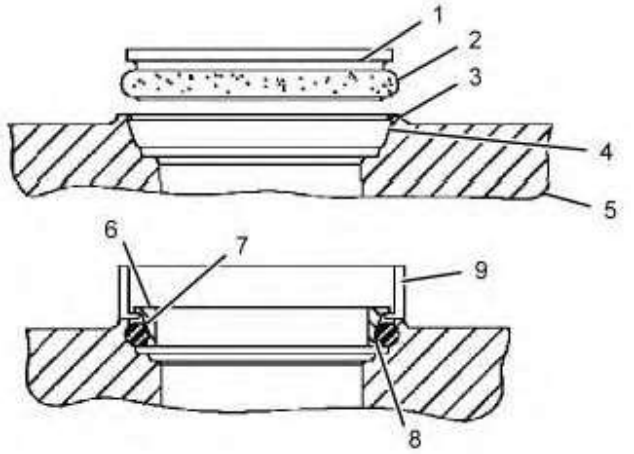

Illustration 3 g03150397

Duo-Cone seal assembly

The standard naming nomenclatures for Duo-Cone seals are listed below.

(1) Seal Ring - The metal component of a seal group.

(2) Rubber Toric (Load Ring) - Elastomeric component of a seal group that applies a face load in the application. This o-ring style seal retains oil and excludes debris.

(3) Housing (Retainer) Lip - The lip inside the housing (retainer) that helps to retain the seal ring/rubber toric during installation.

(4) Housing Ramp - The angled ramp that is located on the housing. Maintaining the proper surface finish is critical.

(5) Housing Retainer - The recess in which a seal ring and a load ring are installed.

(6) Seal Face - The “active surface” of the seal. In a finished seal the face contains the seal band, seal band to taper radius, and taper.

(7) Seal Ramp - The inclined surface on the exterior of the Duo-Cone seal ring that positions the toric between the seal ring and the housing.

(8) Seal Retaining Lip - The function of the retaining lip is to provide a seat for the toric. This radius allows the toric to stay on the ring for ease of assembly.

(9) Installation Tool - Assembly tool used to install the Duo-Cone seal into housing.

(10) Seal Assembled Height (not shown in Illustration 2) - The final installation height of Duo-Cone seal once installed into the housing (retainer). Assembled height measured in three places approximately 120 degrees apart. Not to exceed 1.0 mm (0.04 inch) variation.

For a full Duo-Cone seal assembly there are three components that comprise a full assembly:

(1) Seal ring

(2) Rubber toric

(5) Housing retainer

These three components help create three separate and distinct sealing areas. If one aspect of the seal assembly goes wrong, then a leak path may occur at one or more of following sealing locations.

- Metal-to-Metal Face
- Metal Seal Ring-to-Toric
- Toric-to-Housing

GENERAL INFORMATION

Recommended Cleaning Wipes

Refer to Table for approved lint free wipes.

Cleaners used should not be oil-based products.

Table 1

Lint Free Wipe Crib	IBM Number	CAT Part Number
Chemtool CT Clean 15861 Wipe With Cleaner	3-0124698	169-5420
Chemtool Lint-Free Wipes	3-0080298	265-2256
Kimtex Lint-Free Polypropylene Towels	3-0039125	
New Pig Low-Lint Wipes	WIP230 WIP232	

Service Kits

Service kits and products are available. A list of approved Duo-Cone seal service items is listed below in Table 2.

Table 2

Dealer Service Network Part Number	Dealer Service Network Description	Description	Manufacturer	CAT IBM Crib Part Number
169-5418	Cat Seal Lubricant	1 Gallon Seal Lubricant	Chemtool	None
169-5420	Cat Duo-Cone Seal Cleaner	1 Gallon Seal Cleaner	Chemtool	None
169-0503	Duo-Cone Seal Installation Kit	Seal Installation Kit	CAT	None

STORAGE

Seal and Seal Ring Storage

Contamination Storage Requirements - Regardless of size or shape, seals and gaskets must be stored in such a manner that prevents contamination and maintains cleanliness. The seals and gaskets should be stored in original packaging until installed.

Best Practice Storage - Best-practice storage requires two methods of limiting contamination direct to the seal or seal ring. If one level of protection is easily frayed or fray-able (rubbed or worn into fibers), (for example: wood/cardboard) the storage container must have an internal layer of protection (for example: polybag). Any storage container (lid or bag) must be resealed after each use.

Minimum Acceptable Storage - Minimum acceptable storage practices would include one method of limiting contamination direct to the seal or seal ring.

Unacceptable Storage - Storing seals or seal rings without any means of limiting contamination or with the storage container (lid/bag) open/unsealed is an unacceptable practice. Seals should not be stored in direct sunlight.

Housing Storage - Store housings in a manner that will prevent contamination, rust, or damage to the component.

CLEANLINESS

Refer to the Contamination Control Guidelines, PEBJ0002, "Caterpillar Dealer Contamination Control Compliance Guide".

Use only an approved lint-free wipe to remove all contamination from the seal ring, rubber toric, and housing.

Seals, Seal Rings, and Housing Cleanliness

Seals and seal rings must be kept free from contamination sources. Examples may include but are not limited to, airborne dust and dirt, metal chips, and liquids such as fuels, oils, greases, and solvents.

To reduce the risk of contamination, assembly aids (including lubricants and retention compounds) should be applied immediately prior to assembly. Containers containing cleaners used to clean the seal face and retainers or lubricants used to prelube the seal faces prior to assembly should be kept covered when not being used.

Housing Retainer Lip Cleanliness

Check the housing retainer lip for burrs, surface blemishes, or damage before installing the seals.

HANDLING

Toric Handling

Toric shall be free from contamination and damage. Contact of the toric with threaded components or other sharp objects shall be prevented as the contact risks cutting, nicking, or damaging the seal.

Do not allow contact with unapproved chemicals as the contact may lead to material degradation.

Seal Ring Handling

Illustration 4 g03150399

Proper handling of seal ring

Do not slide the face of the seal ring across any hard surface. When handling a seal ring, clean, lint-free gloves must be used. Refer to Illustration 4.

Handle the seal ring in a manner to prevent contact or damage to the seal ring face.

Remove the seal ring from the packaging prior to assembly.

Review the seal ring face and toric for defects before installation. Defects could include (but not limited to) scratches on the seal ring face, cut or nicked toric.

Housing Handling

Handle the housing in a manner that will promote safety for the operator and prevent contamination or damage to the housing.

PREASSEMBLY INSPECTION OF CRITICAL COMPONENTS

Complete a 1-second inspection of seal and mating components for damage and contamination. A 1-second inspection is a quick visual review of the part and mating component for damage or debris. This inspection is to help identify part issues before assembling the parts to the components.

Seal Inspection - Rubber Toric

Complete a visual inspection to verify that no contamination or damage in the form of, but not limited to: nicks, cuts, or gouges are present.

Toric shall be stored in conformance with the storage and shelf life covered Contamination Control Guidelines, PEBJ0002, "Caterpillar Dealer Contamination Control Compliance Guide".

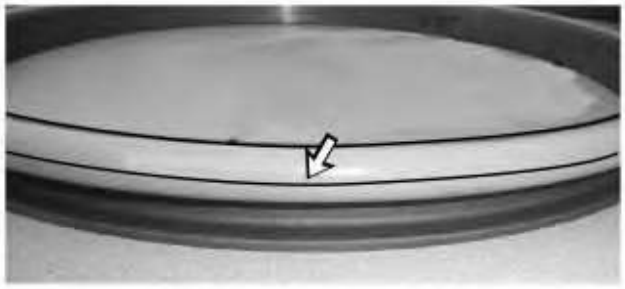

Illustration 5 g03150400

Parting line of toric aligned with outside diameter of seal ring

Toric should have the parting line of the seal aligned with the outside diameter of the seal ring. The parting line should align with the OD of the seal ring. Complete a full 360 degrees inspection of the parting line to ensure the OD of the toric aligns with the OD of the seal ring. Refer to Illustration 5.

If a slight twist is present, the slight twist may lead to misalignment of the OD of the toric and seal ring. Using minimal force, slightly twist or rotate the rubber toric to align properly with the OD of the seal ring.

During reinstallation, rubber toric should not be stretched or twisted beyond what is necessary for installation.

Seal Ring

Illustration 6 g03150401

Critical inspection points for seal ring

Seal Ring Face - Flat Band - Complete a visual inspection to verify that no contamination or damage in the form of, but not limited to: scratches or large chips are present. Refer to Illustration 6.

Taper Band/Flat Band - If contamination is present, use an approved lint-free wipe to remove debris. Be careful not to scratch the surface of the seal ring face when removing debris. Refer to Illustration 6.

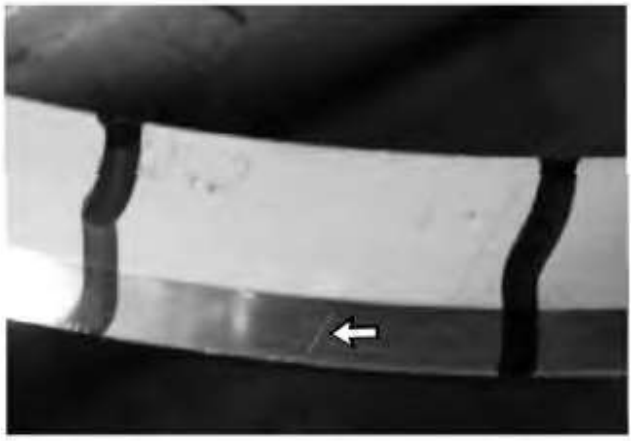

Illustration 7 g03150402

Scratch on seal ring face

Flat Band - Scratches are acceptable only to the degree that the scratches do not impair the function of the seal. Refer to Illustration 7.

Guidelines to be followed