

# CAT<sup>®</sup> SEALS





## CAT® SEALS

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# INTRODUCTION

## Metal Face Seals

For more than 60 years industrial original equipment manufacturers and equipment users have turned to Cat® Seals to protect their components from extreme, abrasive, and corrosive environments. Caterpillar is the leading manufacturer of metal face seals providing the best solutions for tough applications. Cat Seals innovative designs and engineering protect a broad range of equipment and machinery working in adverse conditions such as mud, rock, sand, chemicals, water, heat and cold.

Cat Seals are proven to provide long service life with low maintenance resulting in increased equipment up time, productivity and customer satisfaction.

Caterpillar offers Cat Duo-Cone and Heavy Duty Dual Face seals. Both designs use various elastomeric load rings and various seal ring material. Cat Duo-Cone seals require less space radially and Heavy Duty Dual Face seals require less space axially in a housing. Cat Duo-Cone seals incorporate a round toric while Cat Heavy Duty Dual Face seals have a trapezoidal Belleville Washer.

## Protecting Products

Cat Seals provide protection for internal working components like bearings and gears in abrasive applications and permit the use of oil as a lubricant instead of grease resulting in less friction and longer life. In most applications, the lubricant installed at the factory is permanent with no periodic lubrication or adjustment required.

Unscheduled equipment down time is very costly. Cat Seals provide superior performance in extreme applications where lubricant retention and protection from damaging surroundings is essential. Years of proven field experience has shown Cat Seals provide long life in many applications. Manufacturers in a variety of industries have utilized Cat Seals in their equipment for decades.

## Design

The design of a Cat seal compensates for many manufacturing and operating variables. Two metal sealing rings float in position; two elastomeric torics or Belleville washers exert uniform pressure to accurately position the metal rings and serve as the static seal between the housing and the seal ring. The load rings also transmits the turning torque from the drive housing to the seal ring.

## Cat Seals Features

- Corrosion-resistant seal rings
- Precision machined, self-renewing sealing surfaces
- Minimum face load variations
- Special seal and load ring materials to match application requirements

Rotating speed, lubrication, temperature, and differential pressure are factors to consider when determining seal face loads. Cat Seals provide good performance across a wide range of face loads, therefore, compensating for considerable assembly tolerance buildup, misalignment, and wear.

## Long Life

Extensive laboratory and field testing has confirmed Cat Seals last much longer than other radial lip seals. Used for decades by manufacturers of heavy construction equipment, Cat Seals have reached over 30,000 hours of operation without maintenance, in some applications. As wear occurs, machined metal seal faces are automatically and continually renewed.

## Problem Solver

The high cost of equipment downtime requires the best quality seal available. The Cat seal provides superior performance in extreme applications where lubricant retention and the ability to keep out damaging and/or abrasive materials are essential. Construction, mining, industrial, forestry, petrochemical, paper, agriculture, sewage treatment, landfill, and many more applications are all examples where Cat Seals have improved bearing protection and overall performance.

## Application Engineering

Caterpillar Engineers are available to understand and analyze your sealing requirements, work with your engineering department, and recommend the Cat seal that will best meet your needs. You need only complete an application data sheet (found at [www.cat.com/cat-seals](http://www.cat.com/cat-seals)) and provide drawings of the area containing the seal.

## Seal Ring Materials

Caterpillar offers the widest choice of seal ring and elastomeric material options in the industry. The materials have been engineered to excel in the many different applications in which Cat Seals are integrated.

*For further information on any seal ring material please consult Caterpillar at [catseals@cat.com](mailto:catseals@cat.com)*

Shown below is a general comparison between seal ring materials available.

	<b>C6</b>	<b>Stellite</b>	<b>NiHard</b>	<b>Formed</b>	<b>Forged</b>
<b>Material</b>	Nickel-Alloy	Iron-Alloy	Iron-Alloy	SAE 1074	SAE 52100
<b>Process</b>	Cast	Cast	Cast	Stamped	Forged
<b>Wear Life</b>	High	High	Low/Medium	Low	Low
<b>Corrosion Resistance</b>	High	Medium/High	Low/Medium	Medium	Low
<b>Scoring Resistance</b>	High	Low	Medium/High	Low	Low

## C6

C6 was developed for applications that require high speed and superior corrosion resistance. This alloy offers greater speed capabilities over Stellite with higher resistance to scoring, wear, and corrosion. The C6 alloy is available only from Caterpillar. It is the material of choice around the world in large diameter wheel applications.

## Stellite

Stellite has been designed for the harshest operating environments where abrasive and corrosive elements are present. Stellite's formulation is iron based with a high alloy content designed to provide better corrosion resistance. Stellite cast seals are typically found in applications frequently exposed to abrasive and corrosive conditions with moderate rotational speeds. Typical applications include crawler tractor final drives and various undercarriage applications.

## NiHard

NiHard is another iron based casting alloy offered by Caterpillar. Pressure velocity characteristics are slightly greater than Stellite, but wear life and corrosion resistance have shown to be less, in tests conducted by Caterpillar. Typical applications would include undercarriage and final drive applications where corrosion resistance is not essential, but seal surface speeds prohibit the use of Stellite.

## Formed (Cat Duo-Cone only)

Formed seals were developed for applications that do not require the high levels of corrosion and abrasion resistance, but the versatility of a face seal is desired. Formed seals are used extensively in axle, winch, and final drive applications. Formed seals are interchangeable with cast seal retainers, provide similar load and speed capability as the Stellite seals, at a significantly lower cost.

## Forged

Forged seals are available on a limited basis from Caterpillar. These seals have been used successfully on undercarriage applications where minor wear is present and seal cost is critical.

# PRODUCT DESIGN REVIEW

## Load Ring Materials

Several load ring materials are available to meet a variety of application requirements. The most common materials are Nitrile and silicone, while fluoroelastomer (FKM) and Hydrogenated Nitrile (HNBR) are available for more specialized applications. The table below provides a brief comparison between Cat Seals load ring options.

	<b>Nitrile</b>	<b>LT-NBR</b>	<b>Silicone</b>	<b>HNBR</b>	<b>FKM</b>
<b>Min Temp. (°C/°F)</b>	-17/1	-35/-31	-55/-67	-40/-40	-7/20
<b>Max Temp. (°C/°F)</b>	100/212	100/212	150/302	135/275	160/320
<b>Tear Resistance</b>	Medium	Medium	Low	High	Medium
<b>Abrasion Resistance</b>	Medium	Medium	Low	High	Medium
<b>Oil Resistance</b>	Medium	Medium	Low	High	Superior
<b>Water Resistance</b>	Superior	Superior	Superior	Superior	Medium

## Nitrile (NBR)

Nitrile is compatible with most mineral-based lubricant oils and offers the maximum resistance to abrasion. It is the most common load ring material choice and is used in most standard axle, final drive, and undercarriage applications.

## Low-Temperature Nitrile (LT-NBR)

Low-temperature Nitrile was specifically developed for highly abrasive, low-temperature applications. Typical applications include undercarriage idlers, rollers and final drives.

## Silicone

Silicone uses are extreme high (wet disc brake systems) or extreme low (arctic environment) temperature applications.

## Hydrogenated Nitrile (HNBR)

Hydrogenated Nitrile is a Nitrile-based material and has very similar abrasion resistance characteristics to standard Nitrile, but Hydrogenated Nitrile has better temperature resistance to permanent deformation.

## Fluoroelastomer (FKM)

FKM is a fluoroelastomer and is typically used where extremely high temperatures are a concern and low temperatures are never a problem.

## Seal Group Size (Class) Options

Seals are available in various radial cross sections with toric sections from 4.30 to 16.00 mm (0.170" to 0.630"). Always specify the largest toric/seal group section that can be accommodated in the housing design envelope. Larger section torics will accommodate greater deflection and are less sensitive to tolerances and environmental effects. The table shown below gives a brief summary of available design options.

Class	Toric Size (mm)	Seal Ramp Angle (°)	Housing Ramp Angle (°)	Common Application
A	4.30	20	15	Specialized
B	6.22	15	10	Small Axles and Wheels
C	9.47	8/15/20	10	Undercarriage
D	12.70	8/15/20	10	Large Axles, Wheels, Final Drives
E				Specialized
K	BW	Load Ring	Square Bore	Square Bore All Applications
L	16.00	15	10	Large Wheels

### Class A - 4.30mm (0.17")

Cat Duo-Cone seals utilizing the 4.30 mm cross-section toric ring have very limited applications. They are used in small diameter applications with extreme axial and radial spacial and tolerance constraints (e.g. cartridge pins). Seals of this type have very little end play capability.

### Class B - 6.22mm (0.24")

Cat Duo-Cone seals with 6.22 mm cross section toric rings are typically used in small axle or rock bit applications. They are used where sealing is needed in extreme environments, but where there is insufficient space to put a larger (and more typical) cross section Cat Duo-Cone seal. While these seals do have some end play capability, they have less than seals utilizing larger cross section load rings.

### Class C - 9.47mm (0.37")

9.47 mm cross-section Cat Duo-Cone seals are typically used in moving undercarriages for crawler tractor and excavator applications. These seals have good end play capability. Seals are available with 8°, 15°, and 20° seal ramps to serve different operating environments.

### Class D - 12.70mm (0.50")

This style Cat Duo-Cone seal is very common in axle, wheel, and final drive applications in construction and earth moving equipment. These seals have very good end play capability. Seals are available with both 8°, 15°, and 20° seal ramps for optimized performance in your application.

### Class L - 16.00mm (0.63")

Currently, the largest cross section toric ring offered by Caterpillar, the 16.0 mm cross section diameter Cat Duo-Cone seal is for the largest of sealing applications.

### Class E - Inverted Cat Duo-Cone Seals

Inverted Cat Duo-Cone Seals specialized design for spacial restraints, used for large shaft clearance.

### Class K - Cat Heavy Duty Dual Faced Seals

The Cat Heavy Duty Dual Faced Seal uses a square bore housing design and a Belleville Washer load ring to provide loads to the metal seal faces. This seal is designed for demanding environments and is available in many sizes. Because of the design, there is no rolling of the loading member. This seal type is used in a wide variety of products, including undercarriage, axles, final drives, gear boxes, wheels, etc.

Contact Caterpillar with your seal class questions at [catseals@cat.com](mailto:catseals@cat.com)

# PRODUCT DESIGN REVIEW

## Cat Duo-Cone Seal Ramp Angles

A unique feature of Cat Duo-Cone seals is the changing of sealing ramp angles to tailor the seal to various operating environments. Below is a brief summary of the purpose of various ramp angles.

### 8° Seal Ramp

Cat Duo-Cone seals with 8° seal ramps were originally developed for applications that are exposed to high-pressure differentials. This design offers increased toric retention and a more linear face load profile over its range of operation. The 8° Cat Duo-Cone seal is available in both cast alloy and formed steel designs. Formed Cat Duo-Cone seals are interchangeable with cast Cat Duo-Cone seal retainers.

### 15° Seal Ramp

The 15° Cat Duo-Cone seal is the most common design offered by Caterpillar. This sealing design offers resistance to internal operating pressure and is most commonly used in final drive, axle, and wheel applications.

### 20° Seal Ramp

Similar to the 15° seal design in that it resists internal pressures. The 20° design produces less compression on the toric and because of its bore requirements being shallow, requiring less room axially in its application, the 20° seal ramp is commonly found in undercarriage applications.



## Load Deflection

The combination of the seal ring flange thickness and gage diameter or Heavy Duty Dual Faced Seals inner diameter and elastomeric materials dictate the allowable operating conditions the seal can be used in. The sealing system, the nominal Duo-Cone gap between housings or HDDF operating range and axial tolerance stack will ensure the seal will perform. The Cat seal options are based on those operating conditions. *Caterpillar Engineering should be consulted at [catseals@cat.com](mailto:catseals@cat.com) for proper seal selection and design.*

## Speed Capability

The face load required to keep the metal seal rings in contact is related to the targeted speed of the application. Many factors influence this relationship, including seal ring material, seal ring diameter, operating temperature, lubricant viscosity, differential pressure across the load rings and action of centrifugal force on the load ring.

In low speed applications or with light lubricants, face pressures are generally increased to ensure seal ability. The same is true when seals are exposed to high differential pressures and/or large end play or deflections. Lower face loads are specified for applications producing high rotational speeds or high ambient outside temperatures.

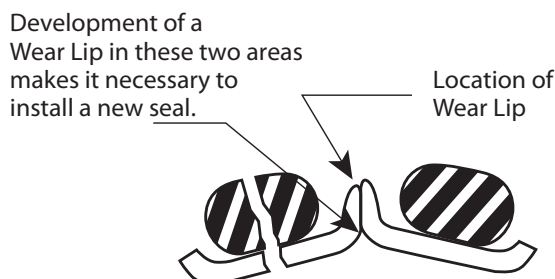
High speeds produce high temperatures which deteriorates lubricant and changes the properties of the elastomer load rings. Depending on the cavity design, high speeds can centrifuge lubricant away from the seal face. All conditions can contribute to adverse sealing effects. *Consult Caterpillar at [catseals@cat.com](mailto:catseals@cat.com) when selecting face load to ensure appropriate design target for your desired speed.*

## Seal Wear Measurement

Cast Cat Seals automatically compensate for wear. The mating faces form a contact band approximately 0.5 (0.02") to 1.0 mm (0.04") wide that retains the oil lubricant and seals out all foreign material. As wear occurs, the contact band will widen slightly and migrate inward until the inside diameter is reached. As depicted in the figure, the cast seals wear down the tapered surface.



Formed seals are more flexible than cast seals and as a result will produce a different wear pattern than cast rings. Typically, formed seals wear in an axial rather than radial direction, as depicted below, due to their increased flexibility.



## Lubricant Requirements

Cat Seals are a mechanical face sealing technology that require lubrication. Oil lubricant should be used with all Cat Seals. Mineral base oils ranging from 10WT to 90WT are commonly used, depending on temperature requirements. Extreme pressure gear lubricants should be used with caution, as some additive packages are not compatible with polymers.

In some slow rotating or oscillating applications, certain types of grease may be used, but mineral base oils are always preferred.

*Contact Caterpillar for additional information at [catseals@cat.com](mailto:catseals@cat.com)*

Oil not only provides lubrication to the sealing faces, but also serves to cool the seal rings. Lubricants are recommended to cover a minimum of one third of the sealing surface, depending on the diameter of the seal, to properly lubricate and cool the rings. Cat Seals work best in clean, closed systems. To allow adequate volume for thermal expansion, non-vented cavities should not be filled more than 90% full. Maximum care should be taken to ensure lube cavities are clean at assembly – free from dirt, scale and other foreign materials.

# DESIGN INFORMATION

## Lubricant Viscosities for Ambient (Outside) Temperature Ranges

Oil Viscosity	°C	°C	°F	°F
	min	max	min	max
10W	-30	0	-22	+32
30W	-20	+25	-4	+77
40W*	-10	+40	+14	+104
50W	0	+50	+32	+122
80W90**	-20	+40	-4	+104
85W140**	-10	+50	+14	+122

\* Commercially available CD/TD-2 oils that meets requirements

\*\* EP gear lubricants should not be used with seals having silicone torics. Consult with Caterpillar before specifying an API GL-5 or MIL-L-2105C type lubricant.

NOTE: Arctic Lubricants – For operation with ambient temperatures below –20°C (-4°F), use oils with base stocks that have low temperature flow capabilities. Use oils with a CD/TO-2 rating. If the application requires API GL-5 gear oil, use the EP synthetic gear lubricants that are available. Low temperature lubricants are not recommended for temperatures above 0°C (+32°F). When operating temperatures reach 0°C, the oil should be changed to one of the lubricants indicated above.

## Specialty Seals

Caterpillar not only offers “off-the-shelf” designs – our team is also available to work with your engineers to design customized or application specific Cat Seals. Whether developing a new seal size or type to fit your application, or integrating a new metal seal or load ring material, Caterpillar Engineers have the experience necessary to design, procure and test these concepts then produce them.

## Product Comparison

In most applications, either Cat Duo-Cone or Heavy Duty Dual Face seals can be utilized. However, there are specific advantages to both designs. These should be considered when designing a Cat seal into your application:

### Cat Duo-Cone Seal

- Requires less room radially in application
- Very stable in housing prior to final assembly
- Very good end play capability

### Cat Heavy Duty Dual Face Seal

- Requires less room axially in application
- Square bore housing cavity design
- No assembly tool or lubricant required

## Supplying Quality

We know quality is important to you and we take pride in supplying our customers highly reliable and durable products. The manufacturing quality of Cat Seals is ensured by our ISO 9001: 2008 accreditation.

## Testing

Caterpillar laboratories are equipped with the latest technologies and testing procedures for development and validation of new seal designs. *Contact Caterpillar for testing options at [catseals@cat.com](mailto:catseals@cat.com)*

## Reliability Testing

Reliability testing is used for evaluating the operating conditions of the specific seal application including the following: seal face loads, internal operating temperatures, internal operating pressures, rotational speeds, etc. and evaluate the performance of the seal to determine a metal seal ring material’s resistance to failure. This test method also determines the maximum speed at which the seal group can perform.

## Load Testing

Load tests evaluate the loading characteristics of the elastomeric ring for a given size. This information is used to determine the load ring compression required to obtain optimal loading on the metal seal faces.

## Accelerated Wear Tests

Accelerated wear testing employs equipment to evaluate a seal ring material’s resistance to abrasive wear. Seals are assembled and submerged in a unique slurry to accelerate the wear process. Wear is quantified by the amount of movement of the sealing band during the test.

## Oil Compatibility Testing

Oil compatibility testing evaluates the effects from exposure with the intended system lubricant and compression level of the system design. This procedure will indicate the rate at which the elastomer will relax during operation and cause a change in load at the seal group interface. The test guides Caterpillar Engineers to identifying the correct load to design for maximum seal life.

*Contact Caterpillar Engineering to identify correct oil compatibility at [catseals@cat.com](mailto:catseals@cat.com)*

A properly installed Cat seal creates a robust system performing without premature failure. The following considerations should be addressed when designing your system.

## Uneven or Excessive Face Load

The seal ring is tilted in the retainer or the toric is twisted result in improper seal installation and can cause uneven loads at the seal interface. This uneven loading can result in premature failure.

## Mishandling of Seals

Mishandling of seals can lead to an immediate leak or premature failure. Failure can occur due to cutting or tearing of the elastomeric load ring, breakage of the sealing ring, contamination of the seal face with dirt or lint, etc. When assembling Cat Seals, please carefully observe assembly instructions provided by Caterpillar.

## Internal Pressure Spikes

Cat Seals can withstand a varying amount of system pressure, depending on the design. If your application requirements include pressure capability, *consult Caterpillar Engineering at [catseals@cat.com](mailto:catseals@cat.com)*

## Improper Housing Design

It is critical that the application seal housing conform to the design information provided by Caterpillar. The relationship between the seal assembly and its mating component is essential to the performance of the sealing system.

## The Proper Selection of Oil

Improper selection of oil can have an adverse effect on both the load ring and metal sealing ring. Some oils are incompatible with elastomers and cause long-term degradation with exposure, especially when combined with heat. Improper oil selection can cause metal seal failure due to galling from inadequate lubrication flow.

## Mud Packing

Mud packing is a common issue in environments where the Cat Seals are continually exposed to dirt and mud. Debris can pack the cavity between the seal housing, seal ring and load ring. Over time, this can cause the load ring to be pushed out of position.

Seal guarding and labyrinths can prolong seal life if applied correctly. Poor labyrinth application can trap debris against the seal and lead to wearing away of the seal housings.

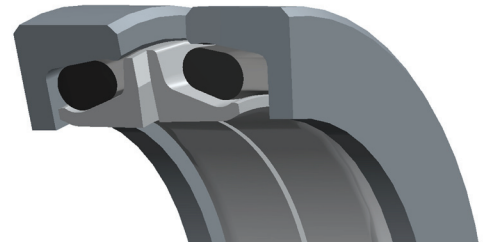
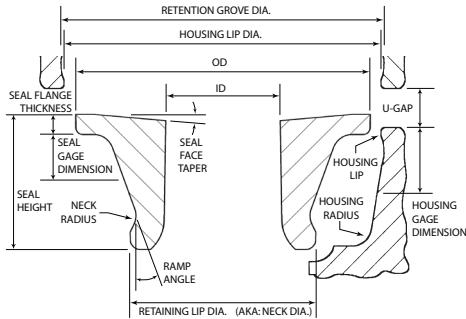
*If your application requirements include resistance to excessive debris, contact Caterpillar at [catseals@cat.com](mailto:catseals@cat.com)*

## Load Ring Abrasion

Abrasion of the load ring can occur in applications where it is exposed to abrasive conditions like corrosive, dusty, dirty, sandy, and rocky. Abrasion of the load ring causes deterioration and tearing of the elastomer, leading to failure. This can be minimized through proper load ring material selection.

*Consult Caterpillar to discuss your seal load ring options at [catseals@cat.com](mailto:catseals@cat.com)*

# CAT DUO-CONE SEALS



Seal Group	Seal Number	Class	OD (mm)	ID (mm)	Ring	Toric	Ramp Angle
386-0992	383-0872	J	51	37.5	Stellite	LT-NBR	20
108-6997	108-6994	B	51	38	Forged	Nitrile	20
386-0993	383-0873	J	58	43	Stellite	LT-NBR	20
386-0994	383-0874	J	58	43.8	Stellite	LT-NBR	19
386-0996	383-0876	J	62	47.5	Stellite	LT-NBR	20
	JS0510S	J	65	50.3	Stellite	LT-NBR	20
8E-5612	7Y-1880	B	65	51	Stellite	Nitrile	15
8E-5610	8E-5613	B	65.67	51	Stellite	Nitrile	15
8E-5611	101-8088	B	65.67	51	Forged	Nitrile	15
386-1000	383-0880	J	70	54.8	Stellite	LT-NBR	20
386-1001	383-0881	J	70	55.3	Stellite	LT-NBR	20
386-1006	383-0886	J	73	60.3	Stellite	LT-NBR	20
386-1003	383-0882	J	74	57.3	Stellite	LT-NBR	20
386-1005	383-0885	J	74	59.3	Stellite	LT-NBR	20
108-6996	108-6995	B	74	60	Forged	Nitrile	20
136-0296	6I-6529	B	74	60	Forged	Nitrile	20
	JS0580SM	J	75	57.3	Stellite	LT-NBR	20
	JS0640SD	J	76	63.3	Stellite	LT-NBR	20
473-1457	473-1458	C	77.5	58.02	Stellite	LT-NBR	8
386-1011	383-0890	J	78	63.3	Ni-Hard	LT-NBR	17.5
386-1010	383-0888	J	82.5	62.8	Stellite	LT-NBR	20
386-1007	383-0887	J	82.55	62.1	Stellite	LT-NBR	20
171-5883	1M-3098	C	82.55	63.1	Stellite	LT-NBR	20
179-1292	179-1291	C	82.55	63.1	Forged	Nitrile	20
212-0440	1M-3098	C	82.55	63.1	Stellite	FKM	20
2M-2858	1M-3098	C	82.55	63.1	Stellite	Nitrile	20
318-1785	318-1784	C	82.55	63.1	Stellite	LT-NBR	20
356-5452	318-1784	C	82.55	63.1	Stellite	Nitrile	20
5K-6191	1M-3098	C	82.55	63.1	Stellite	Silicone	20
8E-1869	101-1922	C	82.55	63.1	Forged	Nitrile	20
8E-1868	7T-7733	C	82.55	63.5	Stellite	Rubber	20
386-1014	383-0892	J	84	68.1	Stellite	LT-NBR	18
386-1013	383-0891	J	85	65.1	Stellite	LT-NBR	20
386-1024	383-0901	J	86.6	73.1	Stellite	LT-NBR	20
1Z-9354	7G-0518	A	87.6	77.5	Stellite	Silicone	20
251-3272	186-6488	A	87.6	77.5	Stellite	LT-NBR	20
251-3272	186-6488	J	87.6	77.5	Stellite	LT Nitrile	20
7G-0519	186-6488	A	87.6	77.5	Stellite	Nitrile	20
386-1017	383-0895	J	89	71.1	Stellite	LT-NBR	20

Contact Caterpillar to determine housing dimensions and custom options at [catseals@cat.com](mailto:catseals@cat.com)

# CAT DUO-CONE SEALS

Seal Group	Seal Number	Class	OD (mm)	ID (mm)	Ring	Toric	Ramp Angle
386-1015	383-0893	J	90	70.1	Stellite	LT-NBR	20
386-1028	383-0904	J	90	77.2	Stellite	LT-NBR	20
386-1020	383-0898	J	92	72.2	Ni-Hard	LT-NBR	20
386-1022	383-0900	J	92	72.2	Ni-Hard	LT-NBR	18
107-4889	9W-8877	C	92	72.52	Stellite	Silicone	8
162-7862	9W-8877	C	92	72.52	Stellite	LT-NBR	8
320-8917	320-8916	C	92	75.52	Stellite	LT-NBR	8
446-6653	446-6652	C	92.05	72.6	Ni-Hard	LT-NBR	20
386-1018	383-0897	J	92.08	71.6	Stellite	LT-NBR	20
171-5882	8H-2229	C	92.08	72.6	Stellite	LT-NBR	20
175-7513	175-7514	C	92.08	72.6	C6	Nitrile	20
1M-8747	8H-2229	C	92.08	72.6	Stellite	Nitrile	20
318-1783	318-1782	C	92.08	72.6	Stellite	LT-NBR	20
359-4800	175-7514	C	92.08	72.6	C6	LT-NBR	20
422-1454	175-7514	C	92.08	72.6	C6	LT-NBR	20
4S-8984	8H-2229	C	92.08	72.6	Stellite	Silicone	20
6V-1915	8H-2229	C	92.08	72.6	Stellite	Nitrile	20
6y-0925	101-8074	C	92.08	72.6	Forged	Nitrile	20
8E-4535	8E-4536	C	92.08	72.6	Stellite	Nitrile	20
9S-3522	9S-3526	C	92.08	72.6	Stellite	Nitrile	20
9W-1059	8H-2229	C	92.08	72.6	Stellite	Silicone	20
9W-1060	8H-2229	C	92.08	72.6	Stellite	Nitrile	20
320-8915	320-8914	C	92.08	76.2	Stellite	LT-NBR	20
386-1026	383-0903	J	94	75.1	Stellite	LT-NBR	20
340-8206	6I-6449	C	94.48	75	Forged	LT-NBR	20
386-1032	383-0908	J	98	80.1	Stellite	LT-NBR	20
386-1034	383-0909	J	98	81.1	Stellite	LT-NBR	20
386-1029	383-0906	J	99.5	79.6	Ni-Hard	LT-NBR	20
9S-3523	9S-3527	C	100.55	90.1	Stellite	Nitrile	20
162-7863	9W-8879	C	102	82.52	Stellite	LT-NBR	8
386-1033	383-0910	C	102	82.52	Stellite	LT-NBR	8
9W-8878	9W-8879	C	102	82.52	Stellite	Silicone	8
386-1036	383-0912	J	103	85.1	Stellite	LT-NBR	20
386-1035	383-0911	J	104.5	84.1	Stellite	LT-NBR	20
216-2957	6S-2772	B	104.67	90	Stellite	LT-NBR	15
5P-0373	6S-2772	B	104.67	90	Stellite	Silicone	15
6S-3285	6S-2772	B	104.67	90	Stellite	Nitrile	15
337-3548	337-3547	B	104.82	89	Stellite	LT-NBR	15
386-1047	383-0921	J	106.5	93.1	Stellite	LT-NBR	20
251-3279	190-8673	A	106.6	96.5	Jinsung	LT-NBR	20
251-3279	190-8673	J	106.6	96.5	Stellite	LT Nitrile	20
252-7909	190-8673	A	106.6	96.5	Jinsung	HNBR	20
9P-9663	190-8673	A	106.6	96.5	Jinsung	Nitrile	20
386-1037	383-0913	J	108	87.1	Stellite	LT-NBR	20
386-1038	383-0914	J	109	89.7	Stellite	LT-NBR	17.5
386-1043	383-0918	J	109	89.7	Ni-Hard	LT-NBR	17.5
386-1046	383-0920	J	109	91.1	Stellite	LT-NBR	20
386-1041	383-0915	J	109.5	89.6	Stellite	LT-NBR	20

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# CAT DUO-CONE SEALS

Seal Group	Seal Number	Class	OD (mm)	ID (mm)	Ring	Toric	Ramp Angle
386-1039	383-0916	J	109.53	89.1	Stellite	LT-NBR	20
204-6277	204-6278	C	109.53	90.1	Forged	Nitrile	20
8E-5029	101-8049	C	109.53	90.1	Forged	Nitrile	20
1M-8746	8H-2230	C	109.55	90.1	Stellite	Nitrile	20
206-9211	8H-2230	C	109.55	90.1	Stellite	LT-NBR	20
434-1920	434-1916	C	109.55	90.1	C6	LT-NBR	20
8S-5656	8H-2230	C	109.55	90.1	Stellite	Silicone	20
107-9621	107-9622	C	110	90.04	Stellite	Silicone	8
162-7864	107-9622	C	110	90.04	Stellite	LT-NBR	8
	JS0950ST	J	111	94.1	Stellite	LT-NBR	20
386-1048	383-0923	J	114	94.1	Ni-Hard	LT-NBR	18
337-3551	337-3550	B	115.82	100	Stellite	LT-NBR	15
386-1054	383-0928	J	119	100	Stellite	LT-NBR	20
171-5811	101-8072	C	119.08	99.6	Stellite	LT-NBR	20
175-8593	175-8594	C	119.08	99.6	Forged	LT-NBR	20
1M-8748	8H-2231	C	119.08	99.6	Stellite	Nitrile	20
206-9212	8H-2231	C	119.08	99.6	Stellite	LT-NBR	20
273-9595	101-8072	C	119.08	99.6	Stellite	Silicone	20
325-3297	325-3296	C	119.08	99.6	Stellite	LT-NBR	20
386-1051	383-0926	J	119.08	99.6	Stellite	LT-NBR	20
3P-1848	8H-2231	C	119.08	99.6	Stellite	Silicone	20
5P-7143	5P-7144	C	119.08	99.6	Stellite	FKM	8
8E-1881	101-8072	C	119.08	99.6	Stellite	Nitrile	20
9S-3524	9S-3528	C	119.08	99.6	Stellite	Nitrile	20
386-1053	383-0929	J	120	99.1	Stellite	LT-NBR	20
386-1059	383-0934	J	121	103.1	Stellite	LT-NBR	20
386-1055	383-0931	J	122	101.1	Ni-Hard	LT-NBR	18
386-1061	383-0937	J	127	108	Ni-Hard	LT-NBR	18
386-1063	383-0938	J	131.5	111.05	Stellite	LT-NBR	20
109-0885	109-0886	C	131.5	112.05	Stellite	Nitrile	20
133-0513	148-3531	C	131.5	112.05	Stellite	Silicone	20
148-3533	148-3531	C	131.5	112.05	Stellite	LT-NBR	20
434-1922	434-1917	C	131.5	112.05	C6	LT-NBR	20
475-8458	475-8457	C	131.5	112.05	Stellite	LT-NBR	20
175-8631	175-8632	C	131.5	112.1	Forged	Nitrile	20
386-1060	383-0935	J	132	108.1	Stellite	LT-NBR	20
155-9879	155-9883	C	133	114.02	Stellite	LT-NBR	8
161-7525	155-9883	C	133	114.02	Stellite	Silicone	8
386-1066	383-0940	J	137	114	Ni-Hard	LT-NBR	20
386-1068	383-0942	J	138.5	119.2	Stellite	LT-NBR	20
272-1012	271-8662	B	139.82	124	Stellite	LT-NBR	15
386-1070	383-0944	J	141	123	Ni-Hard	LT-NBR	20
	JS1270SK	J	141	126	Stellite	LT-NBR	16
252-7907	2S-9754	B	141.25	126.5	Stellite	HNBR	15
315-1147	315-1146	B	141.25	126.5	Stellite	HNBR	15
3S-0303	2S-9754	B	141.25	126.5	Stellite	Nitrile	15
8I-5519	2S-9754	B	141.25	126.5	Stellite	Silicone	15
386-1074	383-0948	J	146	126	Ni-Hard	LT-NBR	15

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# CAT DUO-CONE SEALS

Seal Group	Seal Number	Class	OD (mm)	ID (mm)	Ring	Toric	Ramp Angle
6y-5218	6Y-5220	C	146	127.07	Formed	Silicone	15
6y-5219	6Y-5220	C	146	127.07	Formed	Nitrile	15
386-1072	383-0945	J	146.05	125.6	Stellite	LT-NBR	20
109-0881	109-0882	C	146.05	126.6	Stellite	Nitrile	20
142-1579	5P-7147	C	146.05	126.6	Stellite	Silicone	8
176-5331	147-3597	C	146.05	126.6	Stellite	LT-NBR	20
273-9594	147-3597	C	146.05	126.6	Stellite	Silicone	20
379-8802	379-8801	C	146.05	126.6	C6	LT-NBR	15
5P-7146	5P-7147	C	146.05	126.6	Stellite	Nitrile	8
5P-9121	4S-5002	C	146.05	126.6	Stellite	Nitrile	15
9S-4294	9S-4303	C	146.05	128.6	Stellite	Nitrile	15
285-9346	285-9341	B	148.82	133	Stellite	LT-NBR	15
386-1077	383-0951	J	152	129	Ni-Hard	LT-NBR	20
	JS1430s	J	157	142	Stellite	LT-NBR	15
252-7912	5K-5126	B	157	142.3	Stellite	HNBR	15
315-1149	315-1148	B	157	142.3	Jinsung	HNBR	15
359-4802	435-4568	B	157	142.3	Stellite	LT-NBR	15
5K-5288	5K-5126	B	157	142.3	Stellite	Nitrile	15
5P-0375	5K-5126	B	157	142.3	Stellite	Silicone	15
9S-4295	9S-4304	B	157	142.3	Stellite	Nitrile	15
337-3554	337-3553	B	159.82	144	Stellite	LT-NBR	15
386-1079	383-0952	J	168	145	Stellite	LT-NBR	15
386-1087	383-0959	J	168	152.8	Stellite	LT-NBR	15
186-6531	185-5193	B	168.3	153.6	Stellite	Nitrile	15
351-9947	321-6345	B	168.3	153.6	Stellite	Silicone	15
359-4804	185-5193	B	168.3	153.6	Stellite	LT-NBR	15
424-0676	424-0677	B	168.3	153.6	C6	LT-NBR	15
4C-2002	4C-1967	B	168.3	153.6	Stellite	Silicone	15
5K-1078	5K-1069	B	168.3	153.6	Stellite	Nitrile	15
8I-5516	5K-1069	B	168.3	153.6	Stellite	Silicone	15
9S-4296	9S-4305	B	168.3	153.6	Stellite	Nitrile	15
386-1082	383-0954	J	170	147	Stellite	LT-NBR	15
386-1081	383-0955	J	170	147.5	Ni-Hard	LT-NBR	17.5
386-1084	383-0958	J	170	149	Ni-Hard	LT-NBR	17.5
109-0868	109-0869	C	171.5	152.05	Stellite	Nitrile	20
133-0512	109-0869	C	171.5	152.05	Stellite	Silicone	20
176-5332	147-3598	C	171.5	152.05	Stellite	LT-NBR	20
372-2638	109-0869	C	171.5	152.05	Stellite	LT-NBR	20
6T-8440	4K-0174	D	171.7	143.76	Stellite	Nitrile	15
6T-9984	4K-0174	D	171.7	143.76	Stellite	Silicone	15
9S-4297	9S-4306	D	171.7	143.76	Stellite	Nitrile	15
9W-6717	101-8089	D	171.7	143.76	Forged	Nitrile	15
6T-2981	9G-5312	D	171.7	147.39	Formed	Silicone	15
9G-5311	9G-5312	D	171.7	147.39	Formed	Nitrile	15
386-1085	383-0956	J	172	149	Stellite	LT-NBR	17
386-1088	383-0961	J	173.5	152.8	Stellite	LT-NBR	20
272-6133	272-6135	B	173.82	158	Stellite	LT-NBR	15
386-1089	383-0962	J	180	159.5	Ni-Hard	LT-NBR	17.5

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# CAT DUO-CONE SEALS

Seal Group	Seal Number	Class	OD (mm)	ID (mm)	Ring	Toric	Ramp Angle
386-1090	383-0965	J	183.5	163.8	Ni-Hard	LT-NBR	20
109-0861	109-0862	C	188.5	169.05	Stellite	Nitrile	20
133-0511	109-0862	C	188.5	169.05	Stellite	Silicone	20
171-5825	200-6945	C	188.5	169.05	Stellite	LT-NBR	20
	JS1630S	J	191	162	Stellite	LT-NBR	15
191-6664	4C-1493	D	191.26	163.32	C6	Nitrile	15
210-5536	4C-1493	D	191.26	163.32	C6	HNBR	15
4C-1494	4C-1493	D	191.26	163.32	C6	Silicone	15
6T-8436	7M-0480	D	191.26	163.32	Stellite	Nitrile	15
6T-9985	7M-0480	D	191.26	163.32	Stellite	Silicone	15
9S-4298	9S-4307	D	191.26	163.32	Stellite	Nitrile	15
9W-7331	8P-1858	D	191.26	163.32	Stellite	Nitrile	8
6T-3377	9G-5314	D	191.26	166.95	Formed	Silicone	15
9G-5313	9G-5314	D	191.26	166.95	Formed	Nitrile	15
272-6134	272-6136	B	193.82	178	Stellite	LT-NBR	15
8E-5322	8E-5306	C	199	179.55	Stellite	Silicone	15
386-1093	383-0967	J	210	180.8	Stellite	LT-NBR	15
386-1094	383-0968	J	210	189.8	Stellite	LT-NBR	20
460-5369	460-5367	D	210.31	182.37	Ni-Hard	Silicone	15
6T-8438	4M-2621	D	210.31	182.37	Stellite	Nitrile	15
6T-8439	8P-1849	D	210.31	182.37	Stellite	Nitrile	8
6T-9986	4M-2621	D	210.31	182.37	Stellite	Silicone	15
9S-4299	9S-4308	D	210.31	182.37	Stellite	Nitrile	15
331-7073	9G-5316	D	210.31	186	Formed	LT-NBR	15
3T-6541	9G-5316	D	210.31	186	Formed	Silicone	15
9G-5315	9G-5316	D	210.31	186	Formed	Nitrile	15
386-1095	383-0970	J	215	190.8	Ni-Hard	LT-NBR	20
272-1014	271-8663	B	215.82	200	Stellite	LT-NBR	15
380-4914	380-4913	B	215.82	200	Stellite	LT-NBR	15
177-6717	177-6718	B	222.5	203.18	C6	Nitrile	15
357-7361	5N-7643	B	222.5	208.68	Stellite	FKM	15
5N-7639	5N-7643	B	222.5	208.68	Stellite	Nitrile	15
	JS2050S	J	227	204.5	Stellite	LT-NBR	15
	JS2070R	J	227.5	205.8	Ni-Hard	LT-NBR	20
	JS2070S	J	227.5	205.8	Stellite	LT-NBR	20
	JS2070SF2	J	227.5	205.8	Stellite	HNBR	20
386-1097	383-0971	J	228.5	198.8	Stellite	LT-NBR	15
386-1099	383-0972	J	234	207.8	Stellite	LT-NBR	14
	JS2090R	J	234	207.8	Ni-Hard	LT-NBR	14
	JS2200R	J	239.5	218.8	Ni-Hard	LT-NBR	20
386-1101	383-0975	J	241.4	218.8	Stellite	LT-NBR	15
171-5897	1M-9012	D	251.46	223.52	Stellite	LT-NBR	15
195-3070	195-3071	D	251.46	223.52	C6	Nitrile	8
210-5535	195-3071	D	251.46	223.52	C6	HNBR	8
213-7509	213-7510	D	251.46	223.52	Ni-Hard	Nitrile	15
440-4292	423-6537	D	251.46	223.52	Stellite	Nitrile	8
445-0455	195-3071	D	251.46	223.52	C6	Silicone	8
466-7328	466-7327	D	251.46	223.52	Ni-Hard	Silicone	8

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Seal Group	Seal Number	Class	OD (mm)	ID (mm)	Ring	Toric	Ramp Angle
469-9174	469-8341	D	251.46	223.52	Ni-Hard	Silicone	8
6T-8435	1M-9012	D	251.46	223.52	Stellite	Nitrile	15
6y-0859	423-6537	D	251.46	223.52	Stellite	Nitrile	8
9S-4300	9S-4309	D	251.46	223.52	Stellite	Nitrile	15
9W-4650	1M-9012	D	251.46	223.52	Stellite	Silicone	15
383-4232	9G-5344	D	251.46	227.15	Formed	Silicone	8
6T-2815	9G-5318	D	251.46	227.15	Formed	Silicone	15
9G-5317	9G-5318	D	251.46	227.15	Formed	Nitrile	15
9G-5343	9G-5344	D	251.46	227.15	Formed	Nitrile	8
9W-5977	9G-5344	D	251.46	227.15	Formed	Silicone	8
386-1103	383-0976	J	252	222.3	Stellite	LT-NBR	15
386-1105	383-0978	J	252	224.2	Stellite	LT-NBR	21
202-3206	202-3205	D	258.58	236.5	Formed	Nitrile	15
195-4446	195-4445	D	259.59	231.65	Cast Steel	Nitrile	15
9W-4098	5P-5827	D	259.59	231.65	Stellite	Nitrile	15
9W-6617	5P-5827	D	259.59	231.65	Stellite	Silicone	15
200-4059	6Y-0521	D	259.59	235.28	Formed	Nitrile	15
314-4124	6Y-0521	D	259.59	235.28	Formed	Silicone	15
6y-0520	6Y-0521	D	259.59	235.28	Formed	Silicone	15
	JS2400R	J	262.8	238.8	Ni-Hard	LT-NBR	15
309-7664	309-7663	D	264.71	236.77	C6	Silicone	15
386-1109	383-0982	J	276	248.8	Ni-Hard	LT-NBR	15
137-2429	137-2432	D	292.86	264.82	Ni-Hard	Nitrile	15
145-8032	137-2432	D	292.86	264.82	Ni-Hard	Silicone	15
171-5898	4M-0659	D	292.86	264.82	Stellite	LT-NBR	15
190-0270	6P-3594	D	292.86	264.82	Stellite	FKM	8
204-6452	137-2432	D	292.86	264.82	Ni-Hard	FKM	15
381-0705	6P-3594	D	292.86	264.82	Stellite	Silicone	8
6T-8437	4M-0659	D	292.86	264.82	Stellite	Nitrile	15
9S-4301	9S-4310	D	292.86	264.82	Stellite	Nitrile	15
9W-3732	6P-3594	D	292.86	264.82	Stellite	Nitrile	8
9W-4651	4M-0659	D	292.86	264.82	Stellite	Silicone	15
174-4873	9G-5320	D	292.86	268.45	Formed	LT-NBR	15
3T-9117	9G-5320	D	292.86	268.45	Formed	Silicone	15
9G-5319	9G-5320	D	292.86	268.45	Formed	Nitrile	15
386-1110	383-0985	J	293	263.8	Ni-Hard	LT-NBR	15
386-1113	383-0986	J	303	273.8	Stellite	LT-NBR	15
7T-2459	7T-2458	D	310.88	282.92	Stellite	Nitrile	15
386-1114	383-0987	J	314	280.8	Stellite	LT-NBR	15
386-1116	383-0989	J	325	298.5	Stellite	LT-NBR	15
386-1115	383-0988	J	328	298.5	Stellite	LT-NBR	20
446-1424	446-1422	D	328	302	Ni-Hard	LT-NBR	15
454-7635	451-7016	D	328	302	Ni-Hard	LT-NBR	15
125-5538	125-5535	D	328	303.57	Formed	Silicone	15
174-4874	125-5535	D	328	303.57	Formed	LT-NBR	15
336-7869	125-5535	D	328	303.57	Formed	LT-NBR	15
386-1118	383-0991	J	341	317.2	Stellite	LT-NBR	15
386-1117	383-0990	J	345	317.5	Stellite	LT-NBR	15

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# CAT DUO-CONE SEALS

Seal Group	Seal Number	Class	OD (mm)	ID (mm)	Ring	Toric	Ramp Angle
118-2900	118-2899	D	346.46	318.52	C6	Silicone	8
175-6294	4M-0735	D	346.46	318.52	Stellite	FKM	15
186-3277	173-3072	D	346.46	318.52	Ni-Hard	Silicone	8
190-0271	5P-0992	D	346.46	318.52	Stellite	FKM	8
191-6128	190-8672	D	346.46	318.52	Jinsung	Nitrile	15
373-1647	118-2899	D	346.46	318.52	C6	Silicone	8
383-1597	5P-0992	D	346.46	318.52	Stellite	LT-NBR	8
417-7857	118-2899	D	346.46	318.52	C6	Nitrile	8
6T-8434	4M-0735	D	346.46	318.52	Stellite	Nitrile	15
6y-0857	5P-0992	D	346.46	318.52	Stellite	Nitrile	8
6y-6275	5P-0992	D	346.46	318.52	Stellite	Silicone	8
9S-4302	9S-4311	D	346.46	318.52	Stellite	Nitrile	15
9W-4652	4M-0735	D	346.46	318.52	Stellite	Silicone	15
163-7368	9G-5348	D	346.46	322.14	Formed	LT-NBR	8
207-1571	9G-5322	D	346.46	322.14	Formed	LT-NBR	15
314-4122	9G-5348	D	346.46	322.14	Formed	Silicone	8
3T-8500	9G-5322	D	346.46	322.14	Formed	Silicone	15
9G-5321	9G-5322	D	346.46	322.14	Formed	Nitrile	15
9G-5347	9G-5348	D	346.46	322.14	Formed	Nitrile	8
9W-5978	9G-5348	D	346.46	322.14	Formed	Silicone	8
166-8815	154-3383	D	347.5	318.52	Ni-Hard	Nitrile	15
462-6304	154-3383	D	347.5	318.52	Ni-Hard	Silicone	15
386-1119	383-0992	J	368	336.8	Stellite	LT-NBR	15
386-1120	383-0994	J	368	338.5	Stellite	LT-NBR	15
305-7976	305-7975	D	368.75	341.75	C6	Nitrile	20
386-1123	383-0996	J	375	349	Stellite	LT-NBR	15
386-1124	383-0997	J	381	354.5	Stellite	LT-NBR	15
386-1126	383-0998	J	391	366.5	Stellite	LT-NBR	15
255-2272	9G-5324	D	394.1	369.77	Formed	LT-NBR	15
314-4120	9G-5324	D	394.1	369.77	Formed	Silicone	15
9G-5323	9G-5324	D	394.1	369.77	Formed	Nitrile	15
133-0441	6T-4315	D	394.46	366.52	C6	HNBR	15
137-2428	153-6476	D	394.46	366.52	Ni-Hard	Nitrile	15
149-8434	6T-4315	D	394.46	366.52	C6	Silicone	15
155-1388	153-6476	D	394.46	366.52	Ni-Hard	Silicone	15
205-9115	4D-4471	D	394.46	366.52	Stellite	LT-NBR	15
213-4737	4D-4471	D	394.46	366.52	Stellite	Rubber	15
314-4119	153-6476	D	394.46	366.52	Ni-Hard	Silicone	15
341-8543	6T-4315	D	394.46	366.52	C6	Silicone	15
6T-4316	6T-4315	D	394.46	366.52	C6	Nitrile	15
6T-8433	4D-4471	D	394.46	366.52	Stellite	Nitrile	15
6y-0855	5P-6417	D	394.46	366.52	Stellite	Nitrile	8
6y-6273	5P-6417	D	394.46	366.52	Stellite	Silicone	8
9G-5349	9G-5350	D	394.46	370.05	Formed	Nitrile	8
9W-5979	9G-5350	D	394.46	370.05	Formed	Silicone	8
386-1125	383-0999	J	394.5	365	Stellite	LT-NBR	15
386-1127	383-1000	J	413.5	382.5	Stellite	LT-NBR	15
386-1128	383-1001	J	415	385.5	Stellite	LT-NBR	15

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Seal Group	Seal Number	Class	OD (mm)	ID (mm)	Ring	Toric	Ramp Angle
314-4128	260-0876	D	427.2	400.2	C6	Silicone	15
386-1130	383-1003	J	454	428	Stellite	LT-NBR	15
386-1131	383-1003	J	454	428	Stellite	Viton	15
386-1129	383-1002	J	457	427.5	Stellite	LT-NBR	15
175-6297	4D-8959	D	457.2	429.26	Stellite	FKM	15
186-6493	186-6492	D	457.2	429.26	Cast Steel	Nitrile	15
205-9025	4D-8959	D	457.2	429.26	Stellite	LT-NBR	15
4d-8960	4D-8959	D	457.2	429.26	Stellite	Nitrile	15
201-5468	172-5092	D	457.2	430.35	C6	FKM	8
212-2784	172-5092	D	457.2	430.35	C6	Nitrile	8
137-4343	3T-6605	D	458.36	429.26	C6	HNBR	15
175-6299	3T-6605	D	458.36	429.26	C6	FKM	15
195-3495	3T-6605	D	458.36	429.26	C6	Nitrile	15
195-9706	3T-6605	D	458.36	429.26	C6	Silicone	15
314-4126	3T-6605	D	458.36	429.26	C6	Silicone	15
	JS4500SB	J	480	448.5	Stellite	LT-NBR	13
365-4924	365-4923	D	482.6	454.66	C6	Silicone	15
319-3887	319-3885	D	482.8	454.66	C6	Silicone	15
386-1132	383-1004	J	533.4	503.5	Stellite	LT-NBR	15
214-7880	147-1661	D	533.4	505.46	C6	LT-NBR	15
365-4922	365-4921	D	533.4	505.46	C6	Silicone	15
147-5509	3T-6603	D	534	505.8	C6	Silicone	15
175-6298	3T-6603	D	534	505.8	C6	FKM	15
190-4136	3T-6603	D	534	505.8	C6	Silicone	15
297-9546	3T-6603	D	534	505.8	C6	Silicone	15
6T-6802	3T-6603	D	534	505.8	C6	Nitrile	15
	JS5300SB	J	560	528.5	Stellite	LT-NBR	13
172-5284	365-4919	D	567.94	540	C6	Nitrile	15
317-6441	172-5283	D	567.94	540	C6	Silicone	15
365-4920	448-3600	D	567.94	540	C6	Silicone	15
8E-6327	448-3600	D	567.94	540	C6	Silicone	15
459-9259	459-9260	D	623.14	595.2	C6	HNBR	15
147-5510	448-3602	D	700	667.58	C6	Silicone	15
149-7581	6T-6804	D	700	667.58	C6	HNBR	15
314-4130	448-3602	D	700	667.58	C6	Silicone	15
433-1348	448-3602	D	700	667.58	C6	Nitrile	15
378-0592	448-3601	D	806.72	773.72	C6	Silicone	15
110-9718	6Y-8214	D	865	832	C6	Nitrile	16
147-5511	6Y-8214	D	865	832	C6	Silicone	16
152-9157	6Y-8214	D	865	832	C6	HNBR	16
314-4132	6y-8214	D	865	832	C6	Silicone	16
453-5929	449-9094	D	865.44	832	C6	Silicone	16
422-9076	386-1751	L	939.8	898	C6	Silicone	8
148-6633	144-5306	L	939.8	898.22	C6	HNBR	16
314-4134	144-5306	L	939.8	898.22	C6	Silicone	16

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# INVERTED CAT DUO-CONE SEALS

Item	Class	OD (mm)	ID (mm)	Ring	Toric	Ramp Angle
7T-4080	E	71.4	54.5	Stellite	Nitrile	0
7T-4086	E	71.4	54.5	Stellite	Nitrile	0
108-2382	E	83.4	66.5	Stellite	Nitrile	0
7T-0158	E	83.4	66.5	Stellite	Nitrile	0
7T-4722	E	83.4	66.5	Stellite	Silicone	0
7T-5133	E	83.4	66.5	Stellite	Nitrile	0
108-2381	E	93.4	76.5	Stellite	Nitrile	0
7T-0159	E	93.4	76.5	Stellite	Nitrile	0
7T-5125	E	93.4	76.5	Stellite	Nitrile	0
6V-1800	E	99.4	82.5	Stellite	Nitrile	0
6V-2614	E	99.4	82.5	Stellite	Nitrile	0
7T-0157	E	99.4	82.5	Stellite	Nitrile	0
6V-2615	E	125.4	108.5	Stellite	Nitrile	0
7T-0160	E	125.4	108.5	Stellite	Nitrile	0

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# CAT DUO-CONE SEALS TOOLS

Seal Groups	Seal Ring Class	Seal Ring OD (mm)/Angle (mm)		Toric Cross-Section (mm)	Installation Tool	Assembled Height Nominal+/-Variation	
8E-5608	B	65.67	15	6.22	9U-5985	7.6	1.5
136-0296	B	74	20	6.22	123-3800	6.1	1.5
161-7247	C	77.5	8	9.47	179-7208	10.6	1.5
171-5883	C	82.55	20	9.47	224-9466	9.3	1.5
179-1292	C	82.55	20	9.47	224-9466	8.87	1.5
212-0440	C	82.55	20	9.47	224-9466	9.3	1.5
2M-2858	C	82.55	20	9.47	224-9466	9.3	1.5
356-5452	C	82.55	20	9.47	224-9466	9.38	1.5
5K-6191	C	82.55	20	9.47	224-9466	9.3	1.5
9W-5224	C	82.55	20	9.47	224-9466	8.84	1.5
093-1414	B	84	20	6.22	123-3801	8.01	1.5
1Z-9354	A	87.6	20	4.3	TBD	3.5	1
251-3272	A	87.6	20	4.3	TBD	3.5	1
7G-0519	A	87.6	20	4.3	TBD	3.5	1
107-4889	C	92	8	9.47	224-9467	10.6	1.5
162-7862	C	92	8	9.47	224-9467	10.6	1.5
20-8917	C	92	8	9.47	224-9467	10.6	1.5
446-6653	C	92.05	20	9.47	1U-8840	8.88	1.5
171-5882	C	92.08	20	9.47	1U-8840	8.88	1.5
175-7513	C	92.08	20	9.47	1U-8840	8.88	1.5
1M-8747	C	92.08	20	9.47	1U-8840	8.88	1.5
320-8915	C	92.08	20	9.47	1U-8840	8.88	1.5
359-4800	C	92.08	20	9.47	1U-8840	8.88	1.5
422-1454	C	92.08	20	9.47	1U-8840	8.88	1.5
4S-8984	C	92.08	20	9.47	1U-8840	8.88	1.5
6Y-0925	C	92.08	20	9.47	1U-8840	8.9	1.5
8E-4535	C	92.08	20	9.47	1U-8840	8.9	1.5
340-8207	C	94.5	20	9.47	1U-6145	8.8	1.5
125-3267	C	102	8	9.47	227-4755	10.6	1.5
162-7863	C	102	8	9.47	227-4755	10.6	1.5
9W-8878	C	102	8	9.47	227-4755	10.6	1.5
099-0159	C	104.4	20	9.47	1U-8850	9.1	1.5
216-2957	B	104.67	15	6.22	1U-8850	7.6	1.5
5P-0373	B	104.67	15	6.22	1U-8850	7.6	1.5
6S-3285	B	104.67	15	6.22	1U-8850	7.6	1.5
251-3279	A	106.6	20	4.3	306-5147	3.5	1
252-7909	A	106.6	20	4.3	306-5147	3.5	1
9P-9663	A	106.6	20	4.3	306-5147	3.5	1
204-6277	C	109.53	20	9.47	1U-8841	8.9	1.5
9W-2142	C	109.53	20	9.47	1U-8841	8.88	1.5
1M-8746	C	109.55	20	9.47	1U-8841	8.68	1.5
206-9211	C	109.55	20	9.47	1U-8841	8.68	1.5
434-1920	C	109.55	20	9.47	1U-8841	8.68	1.5
8S-5656	C	109.55	20	9.47	1U-8841	8.68	1.5
107-9621	C	110	8	9.47	129-1340	10.6	1.5
162-7864	C	110	8	9.47	129-1340	10.6	1.5
5P-7143	C	119.08	8	9.47	1U-8842	8.8	1.5

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# CAT DUO-CONE SEALS TOOLS

Seal Groups	Seal Ring Class	Seal Ring OD (mm)/Angle (mm)		Toric Cross-Section (mm)	Installation Tool	Assembled Height Nominal+/-Variation	
096-4254	C	119.08	20	9.47	1U-8842	8.8	1.5
171-5811	C	119.08	20	9.47	1U-8842	8.9	1.5
175-8593	C	119.08	20	9.47	1U-8842	8.88	1.5
1M-8748	C	119.08	20	9.47	1U-8842	8.7	1.5
206-9212	C	119.08	20	9.47	1U-8842	8.7	1.5
273-9595	C	119.08	20	9.47	1U-8842	8.9	1.5
325-3297	C	119.08	20	9.47	1U-8842	8.7	1.5
3P-1848	C	119.08	20	9.47	1U-8842	8.7	1.5
9W-2201	C	119.08	20	9.47	1U-8842	8.9	1
109-0885	C	131.5	20	9.47	9U-7537	8.9	1.5
133-0513	C	131.5	20	9.47	9U-7537	8.88	1.5
148-3533	C	131.5	20	9.47	9U-7537	8.88	1.5
175-8631	C	131.5	20	9.47	9U-7537	8.88	1.5
434-1922	C	131.5	20	9.47	9U-7537	8.88	1.5
436-1439	C	131.5	20	9.47	9U-7537	8.88	1.5
155-9879	C	133	8	9.47	159-9843	10.6	1.5
161-7525	C	133	8	9.47	159-9843	10.6	1.5
252-7907	B	141.25	15	6.22	1U-8699	7.5	1.5
315-1147	B	141.25	15	6.22	1U-8699	6.9	1.5
3S-0303	B	141.25	15	6.22	1U-8699	6.5	1.5
8L-5519	B	141.25	15	6.22	1U-8699	6.9	1.5
6Y-5218	C	146	15	9.47	1U-8849	8.9	1.5
6Y-5219	C	146	15	9.47	1U-8849	8.9	1.5
142-1579	C	146.05	8	9.47	1U-8849	8.8	1.5
5P-7146	C	146.05	8	9.47	1U-8849	8.8	1.5
379-8802	C	146.05	15	9.47	1U-8849	8.85	1.5
5P-9121	C	146.05	15	9.47	1U-8849	8.8	1.5
109-0881	C	146.05	20	9.47	1U-8849	8.9	1.5
135-9104	C	146.05	20	9.47	1U-8849	8.9	1.5
151-9446	C	146.05	20	9.47	1U-8849	8.9	1.5
156-0620	C	146.05	20	9.47	1U-8849	8.88	1.5
176-5331	C	146.05	20	9.47	1U-8849	8.88	1.5
211-2211	C	146.05	20	9.47	1U-8849	8.9	1.5
273-9594	C	146.05	20	9.47	1U-8849	8.88	1.5
252-7912	B	157	15	6.22	1U-8698	7.2	1.5
315-1149	B	157	15	6.22	1U-8698	7.55	1.5
359-4802	B	157	15	6.22	1U-8698	7.55	1.5
5K-5288	B	157	15	6.22	1U-8698	7.55	1.5
5P-0375	B	157	15	6.22	1U-8698	7.55	1.5
337-3554	B	159.82	15	6.22	1U-8698	6.5	1.5
186-6531	B	168.3	15	6.22	1U-8697	7.6	1.5
351-9947	B	168.3	15	6.22	1U-8697	7.55	1.5
359-4804	B	168.3	15	6.22	1U-8697	7.6	1.5
424-0676	B	168.3	15	6.22	1U-8697	7.55	1.5
4C-2002	B	168.3	15	6.22	1U-8697	7.4	1.5
5K-1078	B	168.3	15	6.22	1U-8697	7.55	1.5
8L-5516	B	168.3	15	6.22	1U-8697	7.55	1.5

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# CAT DUO-CONE SEALS TOOLS

Seal Groups	Seal Ring Class	Seal Ring OD (mm)/Angle (mm)		Toric Cross-Section (mm)	Installation Tool	Assembled Height Nominal+/-Variation	
109-0868	C	171.5	20	9.47	4C-6206	8.9	1.5
133-0512	C	171.5	20	9.47	4C-6206	8.9	1.5
139-6611	C	171.5	20	9.47	4C-6206	8.9	1.5
151-9447	C	171.5	20	9.47	4C-6206	8.9	1.5
156-0621	C	171.5	20	9.47	4C-6206	8.88	1.5
176-5332	C	171.5	20	9.47	4C-6206	8.88	1.5
372-2638	C	171.5	20	9.47	4C-6206	8.9	1.5
6T-2981	D	171.7	15	12.7	1U-6443	11.62	1.5
6T-8440	D	171.7	15	12.7	1U-6443	11.55	1.5
9G-5311	D	171.7	15	12.7	1U-6443	11.62	1.5
9W-6717	D	171.7	15	12.7	1U-6443	11.55	1.5
109-0861	C	188.5	20	9.47	9U-7538	8.9	1.5
171-5825	C	188.5	20	9.47	9U-7538	8.88	1.5
9W-7331	D	191.26	8	12.7	1U-6442	15	1.5
4C-1494	D	191.26	15	12.7	1U-6441	11.55	1.5
6T-3377	D	191.26	15	12.7	1U-6441	11.64	1.5
6T-8436	D	191.26	15	12.7	1U-6441	11.55	1.5
9G-5313	D	191.26	15	12.7	1U-6441	11.64	1.5
6T-8439	D	210.31	8	12.7	1U-6440	15	1
331-7073	D	210.31	15	12.7	1U-6439	11.66	1.5
3T-6541	D	210.31	15	12.7	1U-6439	11.66	1.5
6T-8438	D	210.31	15	12.7	1U-6439	11.55	1.5
6T-9986	D	210.31	15	12.7	1U-6439	11.55	1.5
9G-5315	D	210.31	15	12.7	1U-6439	11.66	1.5
177-6717	B	222.5	15	6.22	4C-9527	6.5	1.5
357-7361	B	222.5	15	6.22	4C-9527	6.5	1.5
5N-7639	B	222.5	15	6.22	4C-9527	6.5	1.5
195-3070	D	251.46	8	12.7	1U-6437	15	1.5
326-9200	D	251.46	8	12.7	1U-6437	15	1.5
383-4232	D	251.46	8	12.7	1U-6437	15.17	1.5
445-0455	D	251.46	8	12.7	1U-6437	15	1.5
6Y-0859	D	251.46	8	12.7	1U-6437	15	1.5
6Y-6277	D	251.46	8	12.7	1U-6437	15	1.5
9G-5343	D	251.46	8	12.7	1U-6437	15.17	1.5
9W-5977	D	251.46	8	12.7	1U-6437	15.17	1.5
171-5897	D	251.46	15	12.7	1U-6436	11.55	1.5
213-7509	D	251.46	15	12.7	1U-6436	11.55	1.5
6T-2815	D	251.46	15	12.7	1U-6436	11.73	1.5
6T-8435	D	251.46	15	12.7	1U-6436	11.55	1.5
9G-5317	D	251.46	15	12.7	1U-6436	11.73	1
9W-4650	D	251.46	15	12.7	1U-6436	11.55	1.5
200-4059	D	259.59	15	12.7	1U-6438	11.73	1.5
202-3206	D	259.59	15	12.7	1U-6438	11.73	1.5
314-4124	D	259.59	15	12.7	1U-6438	11.73	1.5
6Y-0520	D	259.59	15	12.7	1U-6438	11.73	1.5
9W-4098	D	259.59	15	12.7	1U-6438	11.55	1.5
381-0705	D	292.86	8	12.7	1U-6435	15	1.5

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# CAT DUO-CONE SEALS TOOLS

Seal Groups	Seal Ring Class	Seal Ring OD (mm)/Angle (mm)		Toric Cross-Section (mm)	Installation Tool	Assembled Height Nominal+/-Variation	
9W-3732	D	292.86	8	12.7	1U-6435	15	1.5
137-2429	D	292.86	15	12.7	1U-6434	11.55	1.5
145-8032	D	292.86	15	12.7	1U-6434	11.55	1.5
171-5898	D	292.86	15	12.7	1U-6434	11.55	1.5
1C-9747	D	292.86	15	12.7	1U-6434	11.77	1.5
3T-9117	D	292.86	15	12.7	1U-6434	11.77	1.5
6T-8437	D	292.86	15	12.7	1U-6434	11.55	1.5
9G-5319	D	292.86	15	12.7	1U-6434	11.77	1.5
9G-5349	D	292.86	15	12.7	1U-6434	11.77	1.5
9W-4651	D	292.86	15	12.7	1U-6434	11.55	1.5
9W-5979	D	292.86	15	12.7	1U-6434	11.77	1.5
7T-2459	D	310.86	15	12.7	220-5726	11.55	1.5
125-5538	D	328	15	12.7	173-6703	11.83	1.5
174-4874	D	328	15	12.7	173-6703	11.83	1.5
336-7869	D	328	15	12.7	173-6703	11.83	1.5
446-1424	D	328	15	12.7	173-6703	11.45	1.5
118-2900	D	346.46	8	12.7	1U-5934	15	1.5
130-6889	D	346.46	8	12.7	1U-5934	15	1.5
163-7368	D	346.46	8	12.7	1U-5934	15.17	1.5
186-3277	D	346.46	8	12.7	1U-5934	15	1.5
314-4122	D	346.46	8	12.7	1U-5934	15.17	1.5
373-1647	D	346.46	8	12.7	1U-5934	15	1.5
383-1597	D	346.46	8	12.7	1U-5934	15	1.5
417-7857	D	346.46	8	12.7	1U-5934	15	1.5
6Y-0857	D	346.46	8	12.7	1U-5934	15	1.5
6Y-6275	D	346.46	8	12.7	1U-5934	15	1.5
9G-5347	D	346.46	8	12.7	1U-5934	15.17	1.5
9W-5978	D	346.46	8	12.7	1U-5934	15.17	1.5
207-1571	D	346.46	15	12.7	1U-5933	11.88	1.5
3T-8500	D	346.46	15	12.7	1U-5933	11.88	1.5
6T-8434	D	346.46	15	12.7	1U-5933	11.55	1.5
9G-5321	D	346.46	15	12.7	1U-5933	11.88	1.5
9W-4652	D	346.46	15	12.7	1U-5933	11.55	1
166-8815	D	347.5	15	12.7	1U-5933	11.55	1.5
305-7976	D	368.75	20	12.7	317-3806	11.4	1.5
255-2272	D	394.1	15.3	12.7	8T-9206	12.1	1.5
314-4120	D	394.1	15.3	12.7	8T-9206	12.1	1.5
9G-5323	D	394.1	15.3	12.7	8T-9206	12.1	1.5
6Y-0855	D	394.46	8	12.7	8T-7789	15	1.5
6Y-6273	D	394.46	8	12.7	8T-7789	15	1.5
133-0441	D	394.46	15	12.7	8T-9206	11.55	1.5
137-2428	D	394.46	15	12.7	8T-9206	11.55	1.5
149-8434	D	394.46	15	12.7	8T-9206	11.55	1.5
213-4737	D	394.46	15	12.7	8T-9206	11.55	1.5
314-4119	D	394.46	15	12.7	8T-9206	11.55	1.5
341-8543	D	394.46	15	12.7	8T-9206	11.55	1.5
6T-4316	D	394.46	15	12.7	8T-9206	11.55	1.5

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# CAT DUO-CONE SEALS TOOLS

Seal Groups	Seal Ring Class	Seal Ring OD (mm)/Angle (mm)		Toric Cross-Section (mm)	Installation Tool	Assembled Height Nominal+/-Variation	
6T-8433	D	394.46	15	12.7	8T-9206	11.55	1.5
314-4128	D	427.2	15	12.7	285-8787	11.5	1.5
212-2784	D	457.2	8	12.7	176-1724	15	1.5
205-9025	D	457.2	15	12.7	8T-0531	11.55	1.5
4D-8960	D	457.2	15	12.7	8T-0531	11.55	1.5
137-4343	D	458.36	15	12.7	8T-0531	11.54	1.5
195-3495	D	458.36	15	12.7	8T-0531	11.54	1.5
195-9706	D	458.36	15	12.7	8T-0531	11.54	1.5
314-4126	D	458.36	15	12.7	8T-0531	11.54	1.5
319-3887	D	482.6	15	12.7	340-0988	11.55	1.5
365-4924	D	482.6	15	12.7	340-0988	11.55	1.5
214-7880	D	533.4	15	12.7	140-7642	11.55	1.5
365-4922	D	533.4	15	12.7	140-7642	14.55	1.5
147-5509	D	534	15	12.7	140-7642	14.55	1.5
297-9546	D	534	15	12.7	140-7642	14.55	1.5
6T-6802	D	534	15	12.7	140-7642	14.55	1.5
172-5284	D	567.94	15	12.7	9U-5691	11.55	1.5
365-4920	D	567.94	15	12.7	9U-5691	11.55	1.5
8E-6327	D	567.94	15	12.7	9U-5691	11.55	1.5
147-5510	D	700	15	12.7	4C-6582	13.65	1.5
314-4130	D	700	15	12.7	4C-6582	13.65	1.5
433-1348	D	700	15	12.7	4C-6582	13.65	1.5
449-7480	D	700	15	12.7	4C-6582	13.78	1.5
378-0592	D	806.72	15	12.7	264-5067	13.78	1.5
314-4132	D	865	16	12.7	4C-4907	13.89	1.5
314-4134	L	939.8	16	16	149-0974	17.74	2
449-7481	L	939.8	16	16	149-0974	17.74	2

Contact Caterpillar for proper tool usage at [catseals@cat.com](mailto:catseals@cat.com)

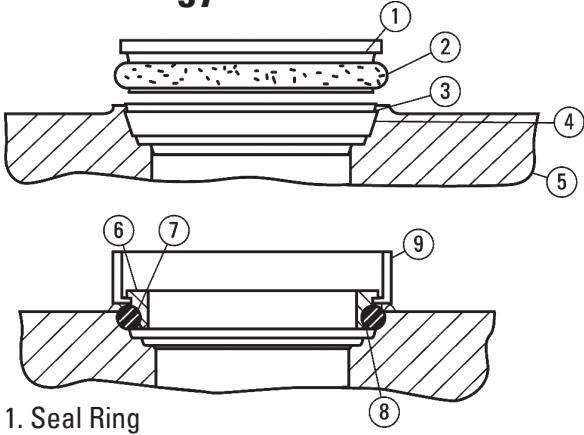
# CAT DUO-CONE SEALS INSTALLATION

## Cat Duo-Cone Seal Assembly

### Contents:

- (2) Metal Seal Rings
- (2) Elastomeric Toric Rings

### Terminology



- |                         |                            |
|-------------------------|----------------------------|
| 1. Seal Ring            | 6. Seal Ring Face          |
| 2. Rubber Toric         | 7. Seal Ring Ramp          |
| 3. Housing Retainer Lip | 8. Seal Ring Retaining Lip |
| 4. Housing Ramp         | 9. Installation Tool       |
| 5. Seal Ring Housing    |                            |

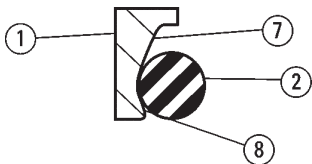
### Handling the Seals

The idea is to protect the seal face. The more precautions taken, the more likely the seals will last in the field.

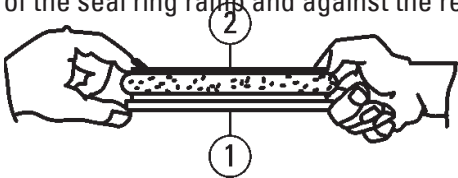
### Housing Preparation

The housing components that contact the rubber toric rings (3 and 4) must be free from foreign material (oil, grease, dirt, metal chips, dust or lint particles, etc.) before installing the seal. The housing should be cleaned using a lint-free wipe and a non-petroleum based solvent. Dry with a clean wipe.

Remove any foreign material from the rubber torics (2), the ramps (7) and the lips (8) of both seal rings. This should also be done with a lint-free wipe and a non-petroleum based solvent. Dry with a clean wipe.



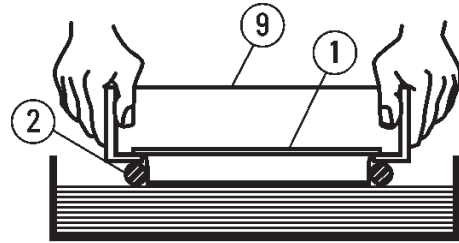
Place the rubber torics on the metal seal ring at the bottom of the seal ring ramp and against the retaining lip.



Make sure the rubber toric is straight on the seal ring and not twisted. Be careful not to nick or cut the torics during the assembly, as this can cause leaks.

Put the installation tool onto the metal seal ring and rubber toric. Lightly dampen the lower half of the rubber toric with the appropriate assembly lubricant.

Techniques to dampen the toric include wiping with a lint-free towel, lubricating using a clean foam brush, or dipping in a container lined with towels saturated in the assembly lubricant (as shown).



Seal groups with silicone torics can be assembled using a freezer to slightly contract the toric rings. Seal groups should be placed in a freezer for 5 minutes at -40°C to -18°C prior to installation. Contraction will be sufficient to allow installation. Groups should warm to room temperature prior to further assembly.

### Approved Assembly Lubricants

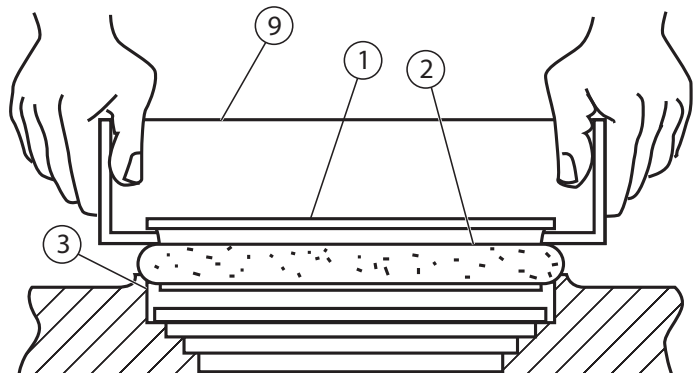
- Isopropyl Alcohol\*
- Houghto-Grind 60 CT
- Quaker® Solvo Clean 68-RAH

(\* ) All applicable safety and disposal guidelines for flammable liquids must be followed.

Note: Do not use Stanosol or any other liquid that leaves an oil film and/or does not evaporate quickly.

### Installation Process

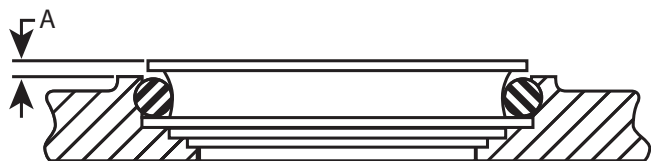
With the lower half of the rubber toric still wet, use the installation tool to position the seal ring and the rubber toric squarely against the application housing (as shown).



# CAT DUO-CONE SEALS INSTALLATION

For smaller diameter seals, use sudden and even pressure to push the rubber toric under the retaining lip of the housing. For larger diameter seals, which will not press in with sudden and even pressure, it is acceptable to work the toric past the retaining lip by starting one side and tapping the opposite side of the installation tool with a rubber mallet until it is engaged past the retaining lip of the housing.

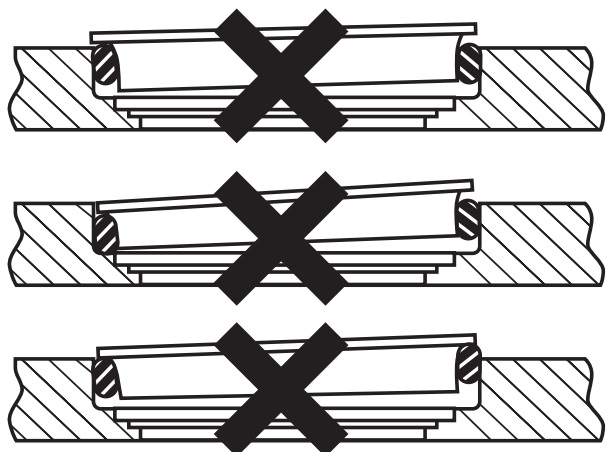
Check the assembled height variation (A) in a least four places, 90° apart, use a caliper, toolmakers' ruler or any other calibrated measuring device.



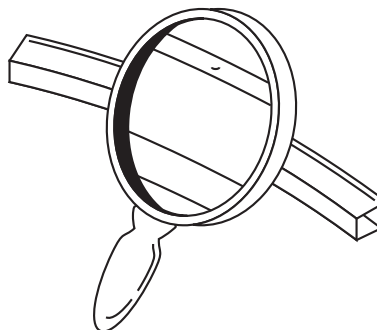
The difference in height around the ring must not be more than 1.0 mm. If small adjustments are necessary, do not push or pull directly on the seal ring. Use the installation tool to push down and your fingers to pull up uniformly on the rubber toric and seal ring.

The rubber toric can twist if it is not wet all around during installation or if there are burrs or fins on the retaining lip of the housing. Twists, misalignment, and bulges of the toric (as shown) will result in seal failure. If correct installation is not obvious, remove the seal from the housing and repeat process.

The rubber torics must never slip on the ramps of either the seal ring or the housing. To prevent slippage, allow adequate evaporation time for the lubricant before proceeding with further assembly. Once correctly in place, the rubber toric must roll on the ramp only. The following shows incorrect installations resulting in cocked seals.



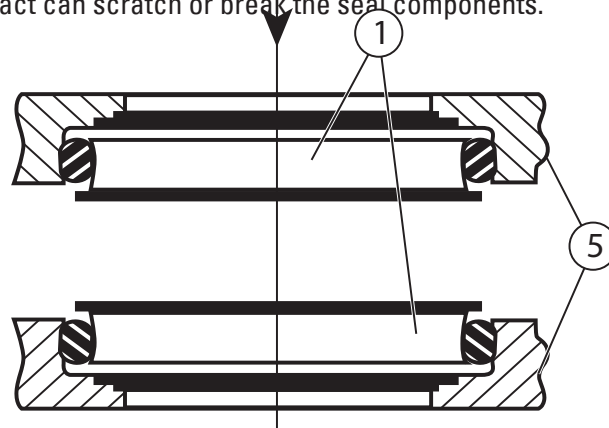
Wipe the face of each seal ring using a lint-free wipe. No particles of any kind are permissible on the sealing surfaces. (Even a hair can hold the seal faces apart and cause a leak)



Apply a thin film of oil on the entire seal face of one or both seals using a lint-free applicator. Oil must not contact surfaces other than the sealing face.

## Final Assembly

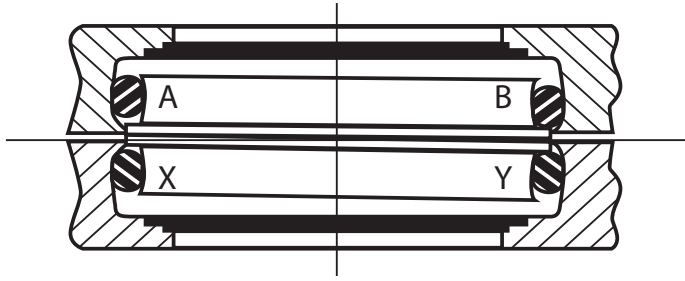
While completing the final assembly of the unit, make sure that both housings are in correct alignment and are concentric. Slowly bring the two housings together. High impact can scratch or break the seal components.



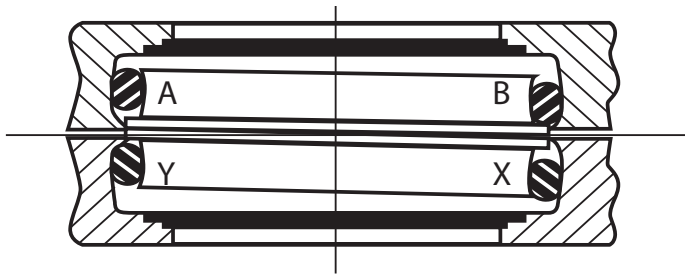
If the rubber toric slips at any location, it will twist, causing the seal rings to cock. Any wobbling motion of the seal is an indication of cocked seals and can cause dirt to enter by pumping mud past the torics.

# CAT DUO-CONE SEALS INSTALLATION

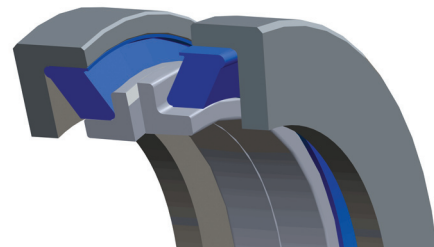
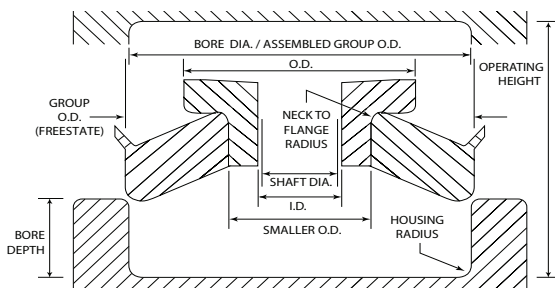
The following examples show the effects of a cocked seal group.



The above depicts how the torics have slipped instead of rolling on the left hand side of the seal. The following shows the same seal after the bottom half is rotated 180°.



# CAT HEAVY DUTY DUAL FACED SEALS



Class K Cat Heavy Duty Dual Faced Seals uses a square bore housing design and a Belleville Washer load ring to provide loads to the metal seal faces.

Seal Group	Seal Number	O.D. (mm)	Smaller O.D.	I.D. (mm)	Shaft Dia	Seal Material	Belleville Washer
132-0356	123-0612	61.60	51.94	46.86	42.88	STELLITE	Nitrile
132-0358	123-0612	61.60	51.94	46.86	42.88	STELLITE	Nitrile
132-0362	123-0612	61.60	51.94	46.86	42.88	STELLITE	LT-NBR
132-0363	123-0612	61.60	51.94	46.86	42.88	STELLITE	LT-NBR
170-3452	123-0612	61.60	51.94	46.86	42.88	STELLITE	LT-NBR
192-0052	192-0049	65.08	56.19	50.60	46.02	C6	Nitrile
132-0365	123-0618	65.08	56.19	50.86	46.02	STELLITE	Nitrile
132-0367	123-0618	65.08	56.19	50.86	46.02	STELLITE	Nitrile
132-0368	123-0618	65.08	56.19	50.86	46.02	STELLITE	Nitrile
132-0369	123-0618	65.08	56.19	50.86	46.02	STELLITE	Nitrile
132-0371	123-0618	65.08	56.19	50.86	46.02	STELLITE	Nitrile
215-6276	123-0618	65.08	56.19	50.86	46.02	STELLITE	LT-NBR
215-6277	123-0618	65.08	56.19	50.86	46.02	STELLITE	LT-NBR
215-6278	123-0618	65.08	56.19	50.86	46.02	STELLITE	LT-NBR
132-0377	123-0604	73.00	63.86	58.27	53.98	STELLITE	Nitrile
132-0379	123-0604	73.00	63.86	58.27	53.98	STELLITE	Nitrile
132-0380	123-0619	86.36	74.93	67.46	63.50	STELLITE	Nitrile
132-0382	123-0619	86.36	74.93	67.46	63.50	STELLITE	Nitrile
132-0383	123-0619	86.36	74.93	67.46	63.50	STELLITE	Nitrile
132-0385	123-0619	86.36	74.93	67.46	63.50	STELLITE	Nitrile
132-0386	123-0619	86.36	74.93	67.46	63.50	STELLITE	LT-NBR
132-0388	123-0619	86.36	74.93	67.46	63.50	STELLITE	LT-NBR
132-0389	123-0619	86.36	74.93	67.46	63.50	STELLITE	LT-NBR
215-6279	123-0619	86.36	74.93	67.46	63.50	STELLITE	LT-NBR
215-6280	123-0619	86.36	74.93	67.46	63.50	STELLITE	LT-NBR
265-5193	265-5191	90.00	82.00	76.00	73.92	STELLITE	Nitrile
269-3358	266-9907	90.00	82.00	76.00	73.92	C6	FKM
132-0397	123-0624	92.48	81.43	73.81	69.85	STELLITE	Nitrile
132-0399	123-0624	92.48	81.43	73.81	69.85	STELLITE	Nitrile
132-0400	123-0624	92.48	81.43	73.81	69.85	STELLITE	Nitrile
132-0402	123-0624	92.48	81.43	73.81	69.85	STELLITE	Nitrile
132-0404	123-0624	92.48	81.43	73.81	69.85	STELLITE	LT-NBR
132-0407	123-0624	92.48	81.43	73.81	69.85	STELLITE	LT-NBR
132-0415	123-0624	92.48	81.43	73.81	69.85	STELLITE	Nitrile
132-0416	123-0624	92.48	81.43	73.81	69.85	STELLITE	Nitrile
132-0417	123-0624	92.48	81.43	73.81	69.85	STELLITE	Nitrile
132-0418	123-0624	92.48	81.43	73.81	69.85	STELLITE	Nitrile

Contact Caterpillar to determine housing dimensions and custom options at [catseals@cat.com](mailto:catseals@cat.com)

# CAT HEAVY DUTY DUAL FACED SEALS

Item Number	O.D. (mm)	Smaller Outer Dia.	I.D. (mm)	Shaft Dia	Seal Material	Belleville Washer	
215-6281	123-0624	92.48	81.43	73.81	69.85	STELLITE	LT-NBR
215-6282	123-0624	92.48	81.43	73.81	69.85	STELLITE	LT-NBR
192-0061	192-0060	92.48	81.43	73.81	69.85	C6	Nitrile
215-6284	123-0631	98.45	81.43	74.22	59.56	STELLITE	LT-NBR
215-6285	123-0631	98.45	81.43	74.22	59.56	STELLITE	LT-NBR
215-6286	123-0631	98.45	81.43	74.22	59.56	STELLITE	LT-NBR
215-6287	123-0631	98.45	81.43	74.22	59.56	STELLITE	LT-NBR
132-0410	123-0631	98.45	81.43	74.22	69.85	STELLITE	Nitrile
138-4162	123-0631	98.45	81.43	74.22	69.85	STELLITE	Nitrile
132-0422	123-0622	100.33	88.90	82.55	77.80	STELLITE	Nitrile
132-0424	123-0622	100.33	88.90	82.55	77.80	STELLITE	Nitrile
245-4631	250-7133	100.33	88.90	82.55	77.80	C6	FKM
444-1244	250-7133	100.33	88.90	82.55	77.80	C6	LT-NBR
253-1727	253-1726	104.00	93.80	88.00	83.50	STELLITE	FKM
377-2188	253-1726	104.00	93.80	88.00	83.50	STELLITE	LT-NBR
132-0433	123-0597	106.55	97.36	90.25	86.36	STELLITE	Nitrile
132-0435	123-0623	112.06	100.76	94.64	88.90	STELLITE	Nitrile
132-0437	123-0623	112.06	100.76	94.64	88.90	STELLITE	Nitrile
132-0438	123-0623	112.06	100.76	94.64	88.90	STELLITE	Nitrile
132-0440	123-0623	112.06	100.76	94.64	88.90	STELLITE	Nitrile
132-0442	123-0623	112.06	100.76	94.64	88.90	STELLITE	LT-NBR
215-6283	123-0623	112.06	100.76	94.64	88.90	STELLITE	LT-NBR
250-4366	123-0623	112.06	100.76	94.64	88.90	STELLITE	FKM
266-3142	123-0623	112.06	100.76	94.64	88.90	STELLITE	Nitrile
377-2182	377-2181	112.06	100.76	94.64	88.90	C6	FKM
439-2605	439-2603	112.06	100.76	94.64	88.90	STELLITE	FKM
132-0447	123-0599	119.46	100.76	94.06	88.90	STELLITE	Nitrile
132-0448	123-0599	119.46	100.76	94.06	88.90	STELLITE	Nitrile
140-9881	123-0599	119.46	100.76	94.06	88.90	STELLITE	FKM
215-6288	123-0599	119.46	100.76	94.06	88.90	STELLITE	LT-NBR
215-6289	123-0599	119.46	100.76	94.06	88.90	STELLITE	LT-NBR
215-6290	123-0599	119.46	100.76	94.06	88.90	STELLITE	LT-NBR
132-0463	123-0616	123.83	111.89	104.78	98.42	STELLITE	Nitrile
132-0464	123-0616	123.83	111.89	104.78	98.42	STELLITE	Nitrile
132-0466	123-0616	123.83	111.89	104.78	98.42	STELLITE	Nitrile
132-0467	123-0616	123.83	111.89	104.78	98.42	STELLITE	Nitrile
132-0469	123-0616	123.83	111.89	104.78	98.42	STELLITE	Nitrile
199-7214	123-0616	123.83	111.89	104.78	98.42	STELLITE	LT-NBR
132-0460	123-0630	123.83	111.89	104.78	98.42	STELLITE	Nitrile
132-0462	123-0630	123.83	111.89	104.78	98.42	STELLITE	Nitrile
185-8643	185-8644	123.83	111.89	104.78	98.42	C6	Nitrile
132-0475	123-0621	132.84	120.90	114.30	109.53	STELLITE	Nitrile
132-0476	123-0621	132.84	120.90	114.30	109.53	STELLITE	LT-NBR
132-0479	123-0621	132.84	120.90	114.30	109.53	STELLITE	Nitrile
132-0480	123-0621	132.84	120.90	114.30	109.53	STELLITE	LT-NBR
132-0481	123-0621	132.84	120.90	114.30	109.53	STELLITE	Nitrile
132-0471	123-0629	132.84	120.90	114.30	109.53	STELLITE	Nitrile
132-0473	123-0629	132.84	120.90	114.30	109.53	STELLITE	Nitrile

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# CAT HEAVY DUTY DUAL FACED SEALS

Item Number	O.D. (mm)	Smaller Outer Dia.	I.D. (mm)	Shaft Dia	Seal Material	Belleville Washer	
209-4514	209-3778	132.84	120.90	114.30	109.53	C6	Nitrile
132-0484	123-0627	138.91	124.53	117.86	114.30	STELLITE	Nitrile
132-0485	123-0627	138.91	124.53	117.86	114.30	STELLITE	Nitrile
132-0483	123-0614	142.24	120.90	114.30	109.53	STELLITE	Nitrile
133-0445	155-3869	142.24	120.90	114.30	109.53	C6	Nitrile
425-1284	155-3869	142.24	120.90	114.30	109.53	C6	LT-NBR
132-0490	123-0603	144.15	131.39	123.83	117.48	STELLITE	Nitrile
132-0492	123-0603	144.15	131.39	123.83	117.48	STELLITE	Nitrile
132-0493	123-0603	144.15	131.39	123.83	117.48	STELLITE	Nitrile
077-2898	123-0617	144.15	131.39	124.33	117.48	STELLITE	Nitrile
132-0488	123-0617	144.15	131.39	124.33	117.48	STELLITE	Nitrile
377-2186	377-2185	144.40	133.48	126.37	117.48	C6	FKM
132-0500	123-0620	155.07	141.91	133.35	128.57	STELLITE	Nitrile
132-0502	123-0620	155.07	141.91	133.35	128.57	STELLITE	Nitrile
132-0503	123-0620	155.07	141.91	133.35	128.57	STELLITE	Nitrile
132-0505	123-0620	155.07	141.91	133.35	128.57	STELLITE	Nitrile
205-8684	123-0620	155.07	141.91	133.35	128.57	STELLITE	LT-NBR
205-9682	210-2148	155.58	141.38	134.37	128.57	C6	FKM
132-0506	123-0626	155.58	141.38	134.37	130.81	STELLITE	Nitrile
132-0497	123-0632	155.98	131.39	124.33	117.48	STELLITE	Nitrile
132-0513	186-5230	162.91	151.93	144.17	140.20	C6	Nitrile
132-0510	123-0601	165.10	150.62	142.88	137.16	STELLITE	Nitrile
132-0512	123-0601	165.10	150.62	142.88	137.16	STELLITE	Nitrile
132-0524	123-0628	167.49	155.98	147.32	144.02	STELLITE	Nitrile
132-0508	123-0611	167.64	150.62	142.88	139.70	STELLITE	Nitrile
132-0509	123-0611	167.64	150.62	142.88	139.70	STELLITE	Nitrile
132-0520	123-0587	167.95	154.69	145.54	142.88	C6	Nitrile
132-0515	123-0625	168.30	155.07	149.40	142.88	STELLITE	Nitrile
132-0516	123-0625	168.30	155.07	149.40	142.88	STELLITE	Nitrile
132-0518	123-0625	168.30	155.07	149.40	142.88	STELLITE	Nitrile
132-0519	123-0625	168.30	155.07	149.40	142.88	STELLITE	Nitrile
132-0521	123-0625	168.30	155.07	149.40	142.88	STELLITE	Nitrile
132-0522	123-0625	168.30	155.07	149.40	142.88	STELLITE	Nitrile
133-0449	123-0625	168.30	155.07	149.40	142.88	STELLITE	Nitrile
133-0476	123-0625	168.30	155.07	149.40	142.88	STELLITE	Nitrile
132-0528	123-0635	179.86	164.62	154.46	149.23	STELLITE	Nitrile
132-0529	123-0635	179.86	164.62	154.46	149.23	STELLITE	Nitrile
132-0531	123-0635	179.86	164.62	154.46	149.23	STELLITE	Nitrile
139-5535	139-5536	180.34	165.10	154.94	157.18	STELLITE	Nitrile
139-5542	139-5536	180.34	165.10	154.94	157.18	STELLITE	Nitrile
132-0532	123-0642	184.15	173.10	162.86	158.75	STELLITE	Nitrile
132-0534	123-0642	184.15	173.10	162.86	158.75	STELLITE	Nitrile
132-0535	123-0639	195.07	180.47	168.91	161.93	STELLITE	Nitrile
132-0536	123-0639	195.07	180.47	168.91	161.93	STELLITE	Nitrile
132-0537	123-0639	195.07	180.47	168.91	161.93	STELLITE	FKM
132-0538	123-0639	195.07	180.47	168.91	161.93	STELLITE	LT-NBR
132-0542	123-0639	195.07	180.47	168.91	161.93	STELLITE	Nitrile
132-0543	123-0639	195.07	180.47	168.91	161.93	STELLITE	Nitrile

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# CAT HEAVY DUTY DUAL FACED SEALS

Item Number	O.D. (mm)	Smaller Outer Dia.	I.D. (mm)	Shaft Dia	Seal Material	Belleville Washer	
132-0544	123-0639	195.07	180.47	168.91	161.93	STELLITE	FKM
132-0546	123-0648	196.85	183.49	174.24	169.06	STELLITE	Nitrile
132-0550	123-0648	196.85	183.49	174.24	169.06	STELLITE	Nitrile
132-0551	123-0646	207.16	189.10	179.00	171.45	STELLITE	Nitrile
132-0552	123-0646	207.16	189.10	179.00	171.45	STELLITE	Nitrile
132-0553	123-0638	214.55	201.85	194.18	188.93	STELLITE	Nitrile
132-0554	123-0638	214.55	201.85	194.18	188.93	STELLITE	Nitrile
132-0555	123-0638	214.55	201.85	194.18	188.93	STELLITE	FKM
132-0558	123-0638	214.55	201.85	194.18	188.93	STELLITE	Nitrile
132-0559	123-0638	214.55	201.85	194.18	188.93	STELLITE	Nitrile
132-0560	123-0638	214.55	201.85	194.18	188.93	STELLITE	FKM
133-0432	123-0638	214.55	201.85	194.18	188.93	STELLITE	Nitrile
133-0446	123-0638	214.55	201.85	194.18	188.93	STELLITE	Nitrile
133-0469	123-0638	214.55	201.85	194.18	188.93	STELLITE	Nitrile
133-0471	123-0638	214.55	201.85	194.18	188.93	STELLITE	Nitrile
133-0473	123-0638	214.55	201.85	194.18	188.93	STELLITE	Nitrile
174-5432	174-5431	214.55	201.85	194.18	188.93	Ni-HARD	Nitrile
358-0793	358-0792	214.55	201.85	194.18	188.93	C6	Nitrile
132-0580	133-0522	214.55	201.85	195.83	190.58	STELLITE	Nitrile
132-0564	123-0644	220.68	207.26	198.12	192.07	STELLITE	Nitrile
132-0565	123-0644	220.68	207.26	198.12	192.07	STELLITE	Nitrile
132-0568	123-0644	220.68	207.26	198.12	192.07	STELLITE	Nitrile
132-0569	123-0644	220.68	207.26	198.12	192.07	STELLITE	Nitrile
132-0561	123-0649	222.25	204.39	193.73	188.93	STELLITE	Nitrile
132-0563	123-0649	222.25	204.39	193.73	188.93	STELLITE	Nitrile
077-4144	123-0636	229.49	212.47	203.84	198.12	STELLITE	Nitrile
132-0570	123-0636	229.49	212.47	203.84	198.12	STELLITE	FKM
132-0571	123-0636	229.49	212.47	203.84	198.12	STELLITE	Nitrile
132-0572	123-0636	229.49	212.47	203.84	198.12	STELLITE	Nitrile
132-0577	123-0636	229.49	212.47	203.84	198.12	STELLITE	FKM
132-0578	123-0636	229.49	212.47	203.84	198.12	STELLITE	Nitrile
161-4343	123-0636	229.49	212.47	203.84	198.12	STELLITE	FKM
132-0582	123-0641	242.09	221.84	215.00	209.55	STELLITE	Nitrile
132-0584	123-0641	242.09	221.84	215.00	209.55	STELLITE	Nitrile
132-0587	123-0652	245.75	233.05	225.43	220.68	STELLITE	Nitrile
132-0590	123-0652	245.75	233.05	225.43	220.68	STELLITE	Nitrile
133-0433	123-0652	245.75	233.05	225.43	220.68	STELLITE	Nitrile
423-6536	123-0652	245.75	233.05	225.43	220.68	STELLITE	LT-NBR
132-0586	123-0653	249.23	221.84	215.14	209.55	STELLITE	Nitrile
132-0591	123-0647	260.35	237.36	227.33	220.68	STELLITE	Nitrile
132-0592	123-0647	260.35	237.36	227.33	220.68	STELLITE	Nitrile
155-8358	155-8359	261.93	246.79	238.50	236.20	C6	Nitrile
172-1619	171-1189	261.93	246.80	244.55	240.15	FORMED	LT-NBR
132-0604	123-0634	270.51	257.18	247.65	242.87	STELLITE	Nitrile
132-0607	123-0634	270.51	257.18	247.65	242.87	STELLITE	Nitrile
132-0595	123-0640	273.05	254.00	241.30	236.52	STELLITE	Nitrile
132-0597	123-0640	273.05	254.00	241.30	236.52	STELLITE	Nitrile
132-0599	123-0640	273.05	254.00	241.30	236.52	STELLITE	Nitrile

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# CAT HEAVY DUTY DUAL FACED SEALS

Item Number	O.D. (mm)	Smaller Outer Dia.	I.D. (mm)	Shaft Dia	Seal Material	Belleville Washer	
132-0601	123-0640	273.05	254.00	241.30	236.52	STELLITE	Nitrile
197-9203	123-0640	273.05	254.00	241.30	236.52	STELLITE	FKM
344-3837	297-4076	273.05	254.00	241.31	73.92	JINSUNG	Nitrile
132-0609	123-0645	285.75	268.28	257.18	250.82	STELLITE	Nitrile
132-0610	123-0645	285.75	268.28	257.18	250.83	STELLITE	Nitrile
132-0611	123-0637	304.80	295.15	283.21	276.23	STELLITE	Nitrile
132-0613	123-0637	304.80	295.15	283.21	276.23	STELLITE	Nitrile
132-0617	123-0654	322.58	295.15	283.21	276.23	STELLITE	Nitrile
133-0447	123-0654	322.58	295.15	283.21	276.23	STELLITE	Nitrile
164-0341	123-0654	322.58	295.15	283.21	276.23	STELLITE	Nitrile
422-0069	123-0654	322.58	295.15	283.21	276.23	STELLITE	LT-NBR
132-0615	123-0655	329.31	312.73	301.63	295.28	STELLITE	Nitrile
148-9594	148-9595	352.43	333.38	320.05	314.96	C6	Nitrile
161-4456	161-4453	352.43	333.38	321.00	314.96	STELLITE	Nitrile
132-0634	123-0585	391.16	370.13	355.6	349.25	Ni-HARD	Nitrile
132-0635	123-0585	391.16	370.13	355.60	349.25	Ni-HARD	Nitrile
132-0626	123-0657	391.16	370.13	355.60	349.25	STELLITE	FKM
132-0632	123-0657	391.16	370.13	355.60	349.25	STELLITE	Nitrile
132-0633	123-0657	391.16	370.13	355.60	349.25	STELLITE	Nitrile
132-0625	123-0658	391.16	370.13	355.60	349.25	STELLITE	Nitrile
132-0627	123-0658	391.16	370.13	355.60	349.25	STELLITE	Nitrile
132-0631	123-0658	391.16	370.13	355.60	349.25	STELLITE	Nitrile
203-0340	123-0658	391.16	370.13	355.60	349.25	STELLITE	FKM
132-0636	123-0659	413.46	392.43	379.73	374.65	STELLITE	Nitrile
132-0637	123-0659	413.46	392.43	379.73	374.65	STELLITE	FKM
149-3957	149-4594	458.22	442.47	429.64	426.72	STELLITE	Rubber
132-0642	123-0660	469.90	454.15	441.86	434.98	STELLITE	Nitrile
132-0643	123-0660	469.90	454.15	441.86	434.98	STELLITE	FKM
132-0646	123-0660	469.90	454.15	441.86	434.98	STELLITE	FKM
132-0639	123-0661	481.33	454.15	438.15	431.16	STELLITE	Nitrile
139-5949	130-9125	481.33	454.15	441.33	434.98	C6	Nitrile
132-0649	123-0663	529.50	511.68	491.80	485.78	STELLITE	Nitrile
133-0510	123-0663	529.50	511.68	491.80	485.78	STELLITE	LT-NBR
132-0650	123-0586	531.00	511.68	492.90	485.78	Ni-HARD	Nitrile
205-9683	123-0586	531.00	511.68	492.90	485.78	Ni-HARD	FKM
176-1164	176-1165	531.00	511.68	497.90	490.78	Ni-HARD	Nitrile
132-0651	123-0664	651.24	631.83	620.00	606.43	STELLITE	Nitrile
132-0654	123-0664	651.24	631.83	620.00	606.43	STELLITE	FKM
132-0657	123-0664	651.24	631.83	620.00	606.43	STELLITE	Nitrile
132-0652	197-1785	782.30	763.00	749.40	736.60	C6	Nitrile
132-0653	197-1785	782.30	763.00	749.40	736.60	C6	FKM

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# CAT HEAVY DUTY DUAL FACED SEALS SERVICE KIT

OD	Field Kit No.	Washer Matl.	Washer 1 No.	Washer 2 No.
61.6	132-0357	Nitrile	132-0860	
61.6	170-0734	LT Nitrile	132-5586	
61.6	174-9900	Viton	132-5593	
65.08	132-0366	Nitrile	132-0824	132-0855
65.08	132-0373	LT Nitrile	132-5595	
65.08	132-0370	Nitrile	132-0855	
73	132-0378	Nitrile	132-0865	
86.36	132-0381	Nitrile	132-0822	132-0853
86.36	132-0384	Nitrile	132-0853	
92.86	132-0398	Nitrile	132-0827	132-0859
92.86	132-0401	Nitrile	132-0859	
98.83	132-0412	LT Nitrile	141-1088	
98.83	132-0414	Viton	132-5596	
100.33	132-0421	Nitrile	132-0832	132-0864
100.33	132-0423	Nitrile	132-0864	
100.33	132-0429	LT Nitrile	132-5589	
112.45	132-0436	Nitrile	132-0829	132-0861
112.45	132-0457	Nitrile	132-0858	
112.45	132-0439	Nitrile	132-0861	
119.46	132-0446	Viton	132-5594	
123.83	132-0461	Nitrile	132-0890	
123.83	132-0465	Nitrile	132-0826	132-0857
123.83	132-0468	Nitrile	132-0857	
132.84	132-0472	Nitrile	132-0891	
132.84	132-0477	Nitrile	132-0866	
132.84	132-0478	LT Nitrile	132-0848	132-5587
132.84	147-2281	Viton	141-4932	
144.15	132-0489	Nitrile	132-0856	
155.58	132-0501	Nitrile	132-0835	132-0867
155.58	132-0504	Nitrile	132-0867	
165.1	132-0511	Nitrile	132-5568	
167.49	132-0526	Silicone	132-5601	
168.28	132-0517	Nitrile	132-0868	
168.28	132-0523	Nitrile	132-0876	
179.86	132-0530	Nitrile	132-0854	
184.15	132-0533	Nitrile	132-0886	
195.07	132-0539	Nitrile	132-0878	
195.07	132-0540	Nitrile	132-0859	132-0878
195.07	132-0541	Viton	132-5563	
196.85	132-0548	Nitrile	132-0887	
207.16	5E-9812	Nitrile	132-0893	
214.55	132-0556	Nitrile	132-0838	132-0872
214.55	133-0460	Viton	132-5597	132-0872
214.55	132-0557	Nitrile	132-0872	
220.68	132-0567	Nitrile	132-0888	

Contact Caterpillar prior to ordering a field service kit at [catseals@cat.com](mailto:catseals@cat.com)

# CAT HEAVY DUTY DUAL FACED SEALS SERVICE KIT

OD	Field Kit No.	Washer Matl.	Washer 1 No.	Washer 2 No.
220.68	132-0566	Nitrile	132-0841	132-0888
222.25	132-0562	Nitrile	132-5566	
229.49	132-0574	Viton	132-0830	132-0862
229.49	132-0575	Nitrile	132-0831	132-0863
229.49	132-0576	Nitrile	132-0863	
242.09	132-0583	Nitrile	132-0882	
245.75	132-0589	Nitrile	132-0873	
260.35	132-0593	Nitrile	132-0897	
261.92	171-1188	Nitrile	155-4091	
270.51	132-0606	Nitrile	132-0889	
273.05	132-0598	Nitrile	132-0881	
273.05	132-0602	Nitrile	132-5562	
322.58	133-0465	Nitrile	132-5590	
329.31	132-0618	Nitrile	132-0896	
352.43	132-0619	Nitrile	132-0899	
391.16	132-0628	Nitrile	132-0877	
391.16	132-0629	Viton	132-0900	
413.46	132-0638	Viton	132-5577	
469.9	132-0644	Viton	132-5592	
481.33	132-0640	Nitrile	132-0871	
529.46	133-0461	Nitrile	132-0875	
663.58	132-0655	Nitrile	132-5564	
663.58	132-0656	Viton	132-5581	
780.19	148-3471	Nitrile	132-5567	

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# CAT HEAVY DUTY DUAL FACED SEALS INSTALLATION

## Cat Heavy Duty Dual Face Seal

### Assembly Contents:

1. (2) Metal Seal Rings
2. (2) Rubber Belleville Washers

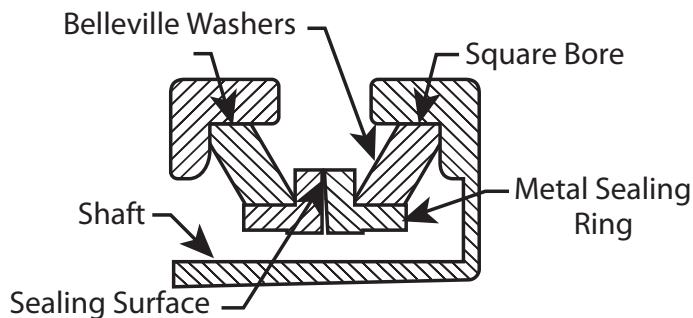
### Service Kit Contents:

1. (1) Seal Group
2. Installation Instruction

### Field Kit Contents:

1. (2) Rubber Belleville Washers
2. Installation Instructions

## Terminology



## Handling the Seals

The idea is to protect the seal face. The more precautions taken, the more likely the seals will last in the field.

## Housing Preparation

The housing components that contact the Belleville Washers must be free from foreign material (oil, grease, dirt, metal chips, dust or lint particles, etc.) before installing the seal. The housings should be cleaned using a lint-free wipe and a non-petroleum base solvent. Dry with a clean wipe.

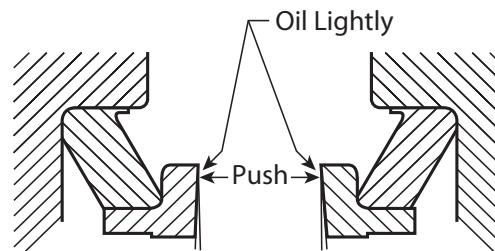
Seal rings must be handled with care. Machined seal faces must not be damaged or scratched. All parts are to be free of grease, oil, dirt and scale.

## Seal Preparation

The Belleville washer should be installed with the inside diameter radius in contact with the neck to flange radius of the seal ring.

## Installation Process

Install each half seal (Belleville Washer and sealing ring) into the housing by carefully pushing on the seal half until it is fully seated. Using a non petroleum based solvent (isopropyl alcohol is recommended) on the Belleville Washer can help ensure the seal slides all the way into the bore. Check to be sure that the seal is not cocked and that the washer is seated evenly at the bottom of the bore. If the seal is a single barb design, the barbed half goes in the suspended housing to ensure no movement of the seal half during the assembly process.



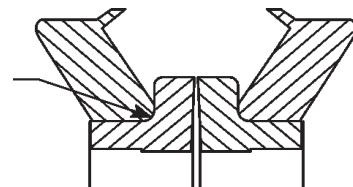
After installing the seal halves into the unit, wipe both metal sealing faces clean with a lint-free wipe. Apply a thin film of oil to the sealing faces with a lint free applicator. Oil must not contact surfaces other than the sealing faces.

## Final Assembly

While completing the final assembly of the unit, make sure that both housings are in correct alignment and are concentric. Observe carefully that the rubber rings do not unseat from the bottom of the housing. Slowly bring the two housings together. (High impact can scratch or break the seal components)

To set the seals, hold one-half of the assembly stationary while rotating the other member a minimum of ten complete revolutions. This is very important!

Neck to  
Flange Radius



# APPLICATION DATA SHEET

Company Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

State/Province \_\_\_\_\_ Zip / Postal Code \_\_\_\_\_ Country \_\_\_\_\_

Contact Name \_\_\_\_\_

Telephone \_\_\_\_\_ Email \_\_\_\_\_

Description of proposed seal application \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Action** \_\_\_\_\_

**Rotating** \_\_\_\_\_ **Oscillating** \_\_\_\_\_

Normal rotating speed \_\_\_\_\_ RPM Angular arc \_\_\_\_\_ degrees \_\_\_\_\_

Maximum rotating speed \_\_\_\_\_ RPM Frequency \_\_\_\_\_ cycles / minute \_\_\_\_\_

Duration of maximum RPM \_\_\_\_\_ minutes Duration of motion \_\_\_\_\_ seconds \_\_\_\_\_

Time to reach maximum RPM \_\_\_\_\_ seconds \_\_\_\_\_

**Sealing System** \_\_\_\_\_

Shaft size or internal component diameter (mm) \_\_\_\_\_ Is seal exposed to the environment? (mm) \_\_\_\_\_

Radial tolerance stack (mm) \_\_\_\_\_ Axial tolerance stack \_\_\_\_\_

**Pressure** \_\_\_\_\_

Is oil compartment vented? \_\_\_\_\_ If no, what is operating pressure (kPa) \_\_\_\_\_ Maximum (kPa) \_\_\_\_\_

If pressurized, where is the pressure (inside / outside / both)? \_\_\_\_\_

**Lubrication** \_\_\_\_\_

Type of lubricant to be used \_\_\_\_\_

List other contacting substances to seal (e.g. grease) \_\_\_\_\_

What is the oil level with relation to the shaft centerline? (mm) \_\_\_\_\_

Normal operating temperature °C \_\_\_\_\_ Maximum operating temperature °C \_\_\_\_\_

**Operating Environment** \_\_\_\_\_

Prolonged muddy conditions? \_\_\_\_\_ Description \_\_\_\_\_

Prolonged abrasive conditions (e.g. quarry)? \_\_\_\_\_ Description \_\_\_\_\_

Prolonged high temperatures (above 100°C)? \_\_\_\_\_ Prolonged cold temperatures (below 0°C) \_\_\_\_\_

Other (e.g. landfill) \_\_\_\_\_

**Assembly Drawing** \_\_\_\_\_

To determine tolerance stack-up, end play, surface textures, and axial / radial spatial constraint \_\_\_\_\_

Gap distance between seals (U-gap) \_\_\_\_\_

To check design for simplicity, ease of assembly, exposure to, and protection from outside environment

**Anticipated Annual Volume:** \_\_\_\_\_

Year 1: \_\_\_\_\_, Year 2: \_\_\_\_\_, Year 3: \_\_\_\_\_

# APPLICATION DATA SHEET

SEAL AREA DATA:

*Send data sheet to Caterpillar at [catseals@cat.com](mailto:catseals@cat.com)*



**For more information on Cat Seals**

**[www.cat.com/cat-seals](http://www.cat.com/cat-seals)**



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