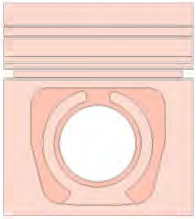
GENUINE CUMMINS DIFFERENCE

ALTRAK 1978

YOUR TOTAL PARTNER

Cummins

TENSILE STRENGTH



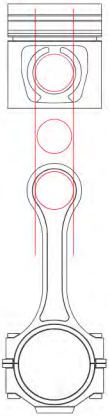
THE TENSILE STRENGTH OF THE RAW MATERIALS IN THE **GENUINE CUMMINS PISTON** IS **STRONGER BY**

30%

THAN A NON-GENUINE PART

RISK
- RELIABILITY OF THE PART
- LIFESPAN OF THE PISTON

DIMENSIONS & SPECIFICATIONS



FOR A NON-GENUINE PRODUCT, THE **DIAMETER BORE** CAN BE

0.035%

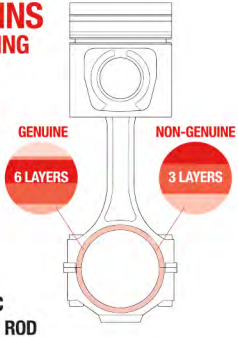
LARGER THAN IDEAL SIZE

RISK
- FATIGUE IN THE PIN BORE
- CRACKS IN THE PIN BORE

A **GENUINE CUMMINS CONNECTING ROD BEARING** IS CONSTRUCTED OF

6 LAYERS.

NON-GENUINE PART CONSISTS OF **ONLY 3 LAYERS**

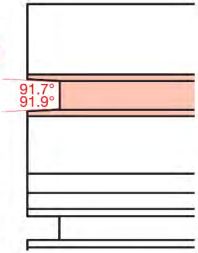


RISK
- RUSTS EASILY
- COULD CAUSE CATASTROPHIC FAILURE OF THE CONNECTING ROD
- COMPROMISED RELIABILITY

A **NON-GENUINE PISTON TOP RING GROOVE** MAY HAVE

0.4%

DIFFERENCE IN THE ANGLES OFF THE PERFECT PRECISION

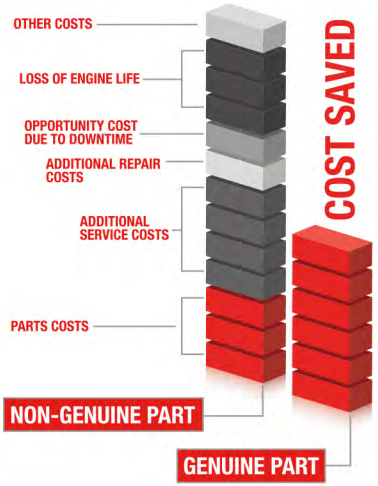


RISK
- TOP RING SCUFFING
- OVERHEATING

AVOID THESE RISKS

- DROP IN OUTPUT POWER
- OVERHEATING
- HIGHER EMISSIONS
- EXCESSIVE OIL CONSUMPTION
- ADDITIONAL COST

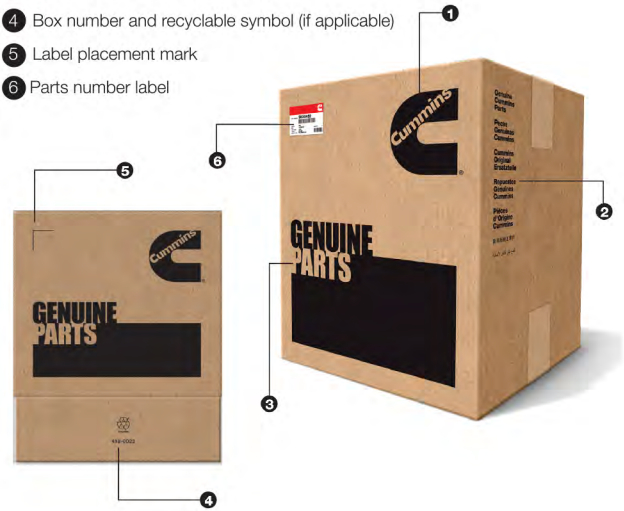
CHOOSE
GENUINE CUMMINS PARTS!



DON'T BE CHEATED
BY THE COUNTERFEIT PARTS!

Look out for the following when purchasing Cummins parts:-

1. Cummins® logo
2. Genuine Cummins Parts translation in seven languages
3. Genuine Cummins Parts Signage
4. Box number and recyclable symbol (if applicable)
5. Label placement mark
6. Parts number label



Other factors to look out for:

- Boxes and packages are properly sealed upon reaching customers
- Product material and workmanship of parts inside the box
- Price should not be significantly below market
- Boxes are sized to fit parts with little or no gaps

LOCATING CUMMINS DISTRIBUTORS

Genuine Cummins parts use the latest material with state of the art technology. We offer best-in-class warranty and are supported by 7,100 service locations around the world. The difference between Genuine Cummins and non-Genuine parts are often invisible to the eye.

Buy Genuine Cummins parts from Cummins authorized channels. Don't take unnecessary risks and sacrifice reliability. You'll have peace of mind when you choose a Genuine Cummins part. Visit quickserve.cummins.com to find your local distributors.

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PT. ALTRAK 1978

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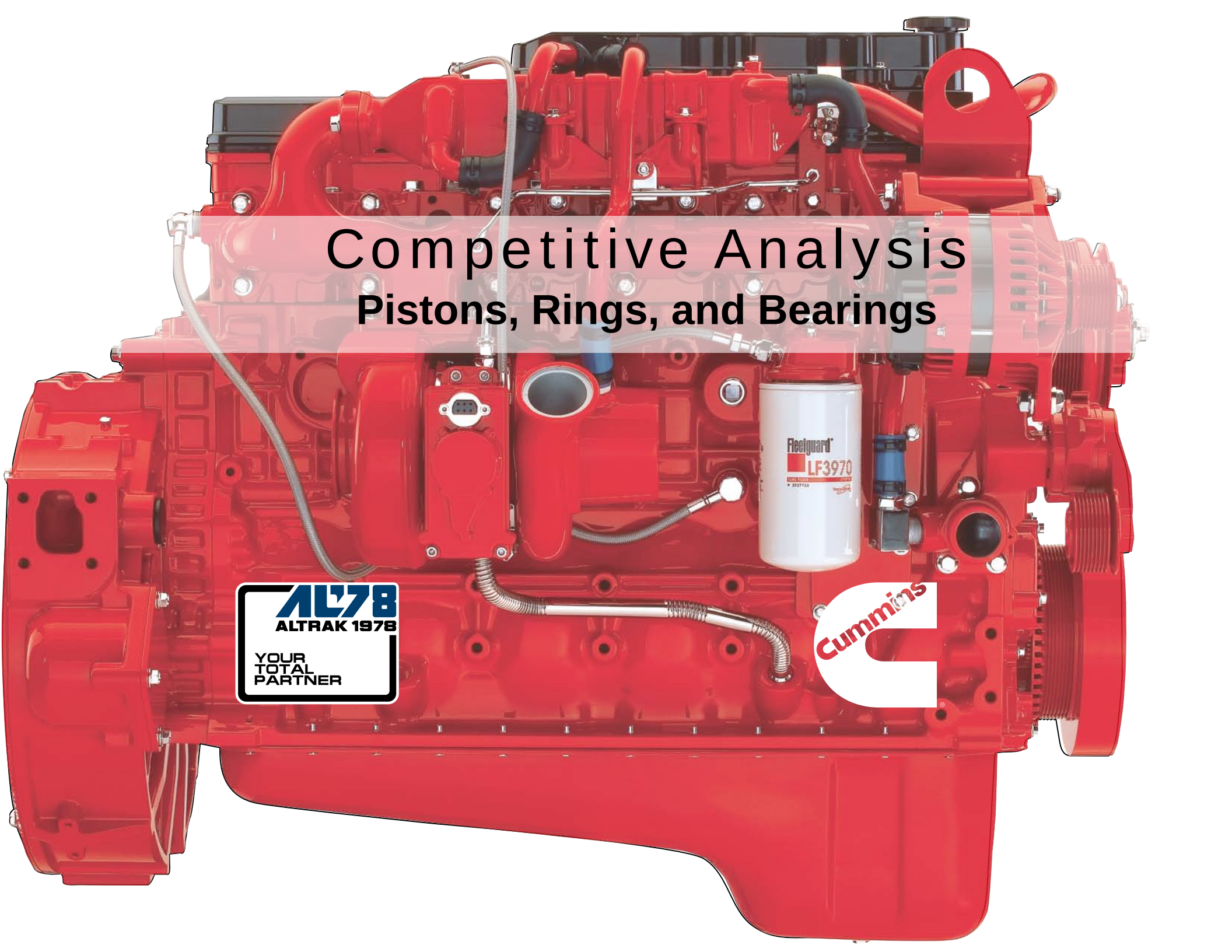
e-mail: al78@altrak1978.co.id | **web address:** www.altrak1978.co.id

ACEH(Sales Representative)(021) 853 - 81770956 **AMBON(Sales Representative)**(021) 852 - 99564265 **ASEM REGES**(021)34834511 **BALIKPAPAN(Branch)**(0542)761978 **BANDUNG(Branch)**(022)42827424 **BANJARMASIN(Branch)**(0511)3251979 **BATAM(Branch)**(0778)571978(Hunting) **BATU KAJANG(Depo)**(0543) 5230488 **BENETE(Depo)**(0372)635260 **BENGKULU(Rep. Office)**(0736)5511170 **BENGALON(Depo)**081225430084 **BERAU(Depo)**(0554)2020118 **BITUNG(Branch)**(0438)35078 **BONTANG(Depo)** 08125417977 **CIKARANG(Outlet)**(021)89901978 **CILACAP(Depo)**(0282)5567602 **CILEGON(Outlet)**(0254) 390678, 399971 **DENPASAR(Branch)**(0361)7427178 **JAMBI(Branch)**(0741)63408 **KENDARI(Branch)**(0401)3082554 **KETAPANG(Depo)**(0534)34476 **KUPANG(Rep. Office)**(0380)8441038 **LAMPUNG(Branch)**(0721)789976 **MAKASSAR(Branch)**(0411)4741305 **MANADO(Rep. Office)**(0431)812612 **MEDAN(Branch)**(061)8449978 **MELAK(Depo)**081347371283 **PADANG(Branch)**(0751)4485624 **PALANGKARAYA(Sales Representative)** (021) 812 - 50835776 **PALEMBANG(Branch)**(0711)364453 **PALU(Sales Representative)**(021) 811 - 4564788 **PANGKAL PINANG(Branch)**(0717)439578 **PEKANBARU(Branch)**(0761)567678 **PONTIANAK(Branch)**(0561)748670 **SAMARINDA(Branch)**(0541) 261978 (Hunting) **SAMPIT(Branch)**(0531)2611978 **SANGATTA(Depo)**(0549)23360 **SATUI(Depo)**(0512)2708078 **SEMARANG(Branch)**(024)3586962 **SORONG(Branch)**(0951)3178502 **SURABAYA(Branch)**(031)8471978 **TAMAN TEKNO(Parts Distribution Center)**(021)75876118 **TANJUNG TABALONG(Depo)**(0526)2701578 **TANJUNG PINANG(Depo)**(0771)8080177 **TARAKAN(Rep. Office)**(0551)3829585 **TEMBAGAPURA(Depo)**(0901)462652.



Competitive Analysis

Pistons, Rings, and Bearings

Competitive Analysis

Pistons, Rings, and Bearings

Cummins is the world's largest designer and independent manufacturer of diesel engines ranging from 31 to 3500 horsepower, providing global manufacturing and service. Founded in 1919 by Clessie Cummins (inventor) and W.G. Irwin (investor), Cummins is a multinational Fortune 500 company that operates and serves customers around the globe.

1,200 OEM customers are served by Cummins.

The business consists of 500+ distributors, 5200+ dealer locations and 10 joint ventures, covering 190 countries.

What makes Cummins Genuine parts better than the competition? Cummins warranty, covers 100% parts and labor, progressive damage, mark up and consumables.

It is executed by world's largest independent parts and service network with over 5,500 service locations. One of the biggest differences of doing business with a worldwide company like Cummins is the warranty coverage.

The second difference is quality. Cummins engineers tested Cummins parts and competitive parts based on visual inspection, critical measurements, materials analysis and chemistry analysis.

The study was completed on Mid-Range engine critical parts, including pistons, rings, and bearings. The following pages show why Cummins Genuine parts are better than the competition.

Pistons: Oil Drain Holes

Oil drain holes are important because they allow oil that is caught during the combustion process to drain back into the crankcase. Without these holes, oil would flow into the combustion chamber, where it would burn, causing increased oil consumption and carbon deposits. Placement of the oil drain holes is crucial to the strength and durability of the piston.

Cummins

Competitor

Notice the difference between the placement of the oil drain slots. The oil drain slots on the competitor's piston are located close to the pin axis, weakening the piston.

Pistons: Combustion Bowl

If the combustion bowl volume, radius, and distance from the top of the top ring to the top of the piston are not to specification, it can lead to poor fuel economy, engine smoke, starting issues, piston weakness, and low durability.

Cummins

Competitor

The radius directly changes the volume of the bowl, affecting compression ratio. Incorrect volume leads to an incorrect compression ratio. An incorrect radius leads to stress risers, making the bowl rim weak.

Pistons: Summary

The Cummins piston was found to be stronger and more durable in chemical make up. **Cummins tensile strength is 17% better.**

Competitor pistons showed internal and sub-surface porosity, leading to a weak piston with low durability.

Competitor pistons commonly included piston crown stampings along the pin axis which can weaken the piston.

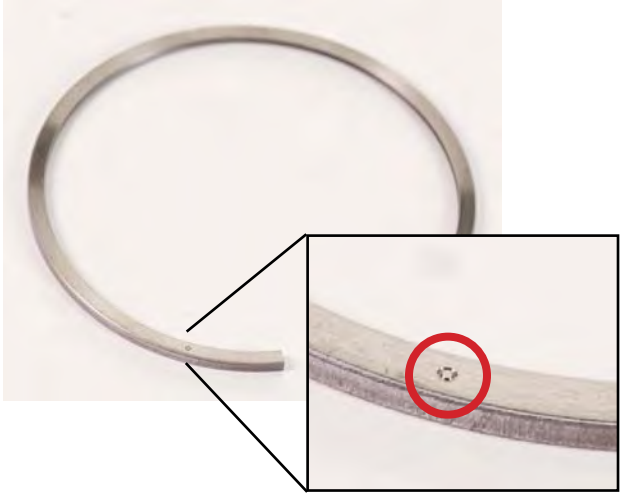
The competitor pin bores are not machined with critical pin-to-pin bore profiling as are the Cummins pistons. This profiling is critical to the strength of the pin-bore joint. Lack of appropriate profiling leads to a weaker joint and potential power cylinder failure.

Installing the competitors' pistons could lead to:

- Poor durability
- Black or White smoke
- Excessive smoke issues
- High Blowby
- Poor fuel economy
- High oil consumption
- Loss / Lack of power
- Ring scuffing / excessive ring wear
- Pin bore scuffing / cracking
- Power Cylinder / Catastrophic failures

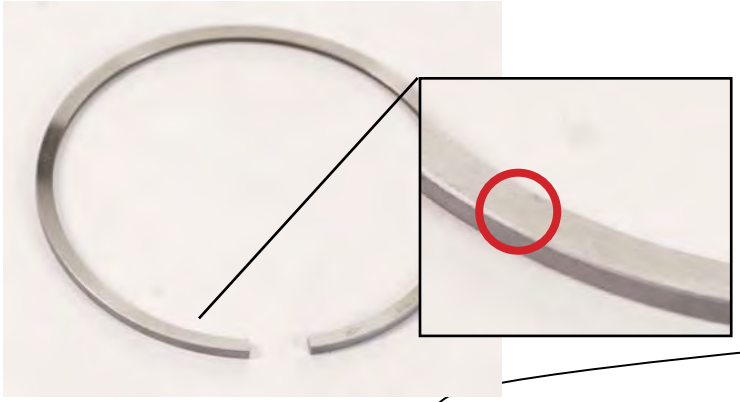
Rings: Top Rings

Cummins



Competitor

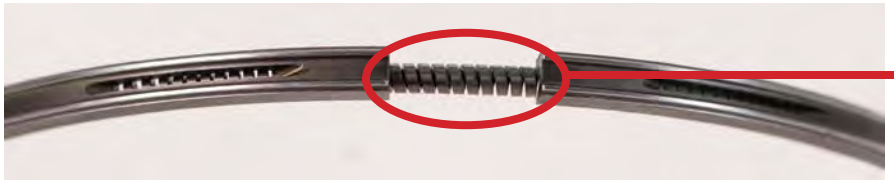
Competitor



The competitors' top rings have no deep circle marking, which can lead to improper installation causing high oil consumption after rebuild.

Rings: Oil Rings

Cummins



Competitor

The Cummins oil ring has a correct pitch at the gap, while the competitive piston does not. Incorrect pitch can lead to high oil consumption, scuffing, and accelerated wear. The Cummins ring is more durable.

Competitors' oil ring gaps are too large and have large variation which can lead to high oil consumption, friction, and scuffing. The depth of the grooves between lands exhibits high variance around the ring, which can lead to poor oil scraping capability and high oil consumption. Oil ring lands are poorly and inconsistently machined which can lead to poor scraping capability, higher wear, and higher oil consumption.

Bearings: Thrust Bearings

Cummins

Competitor

The competitor's bearings are bronze alloy, resulting in higher corrosion and wear rates.

Test Results

Competitor thrust bearing has short flanges	→	Less area to support thrust.
Competitor bearing is a one piece assembly versus the Cummins three piece assembly	→	Cummins offers better conformity and geometry with load bearing surfaces which allows for higher thrust loads and better wear characteristics
Competitor alloys have large lead pools, no steel backing and large aluminum bonding layer	→	Low fatigue strength, corrosion and accelerated wear

Bearings: Main Bearings

Cummins

Competitor

Competitor's main bearing oil holes have large chamfer ID's resulting in less bearing area and less strength.

- Competitor's main bearing oil holes have large chamfer ID's resulting in less bearing area and less strength.
- Cummins part chemistry and hardness exhibit higher fatigue strength, better wear and durability than competitive parts.
- The Cummins microstructure has higher fatigue strength, leading to a more durable bearing.
- Non-Genuine parts provide minimal or no crush relief resulting in a poor oil film and accelerated wear.

Why Genuine?

Genuine Cummins parts utilize advanced materials, incorporate state-of-the-art Cummins design technology, are continually improved, have an industry-leading warranty, and are backed by a worldwide service organization.

You are safe and smart when you purchase a replacement part from an authorized Cummins distributor or dealer.

Pistons, rings, and bearings are at the heart of your engine. For a “heart healthy” engine, trust Genuine Cummins parts. **Every™ Time.**

The Real Cost of Non-Genuine.

When considering a repair, there is more to think about than the actual cost of the parts. With Cummins Genuine parts, you not only get Cummins quality with industry leading parts warranty, you get coverage for progressive damage. The cost of a failure can quickly overshadow the price difference between genuine and non-geunine parts.

Average cost of a repair resulting from piston failure*

$4,500
Mid-Range

$7,000
Heavy Duty

$20,000
High HorsePower

*Cost includes parts, labor, and travel. Progessive damages, such as power cylinder, aftercooler, air compressors, camshaft, connecting rods, cylinder head, egr coolers, lube pil pumps, main bearings, rod bearing, and turbocharger failures are included.

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Cummins ReCon® Engines/Blocks

Automotive	Months	Mileage/Km
4B/B3.9	24	50,000/80,468
ISB/B5.9/6B	24	100,000/160,935
6C/ISC/C8.3/ISL Up to 225 hp	24	Unlimited
6C/ISC/C8.3/ISL Over 226 hp	24	100,000/160,935
L10/M11/ISM/N14/VT903*	12	100,000/160,935
ISX*	24	200,000/321,869
4B/6B/ISB/6C/ISC/ISL Long Blocks	12	50,000/80,468
L10/M11/ISM/N14/ISX Long Blocks	12	100,000/160,935
4B/6B/ISB/6C/ISC/ISL Short/Service Blocks	6	Unlimited
L10/M11/ISM/N14/ISX Short/Service Blocks	12	100,000/160,935

Industrial/Marine	Months	Hours
All Industrial Engines**	24	2,000
All Marine Engines**	24	2,000
Industrial Long Blocks***	12	1,000
Industrial Long Blocks (Oil/Gas)***	12	Unlimited
Industrial/Marine Short/Service Blocks	6	Unlimited

* Extended Major Components Coverage may also apply. (Note: See Warranty Administration Manual for coverage detail.)

** For Industrial and Marine engines, if the 2,000-hour limit is exceeded during the first year, coverage continues until the end of the first year. ReCon engine warranty covers up to 6 hours of travel for Industrial and Marine engines/Long Blocks when engine is disabled as a result of a warrantable failure.

*** Long Block Industrial travel for warranty covers up to 4 hours only.

Cummins ReCon® Parts

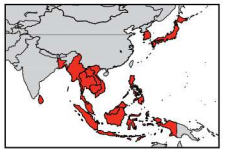
Components	Months	Mileage/Km/Hrs
B & C Series Components (except fuel pumps, injectors and electrics)	6	Unlimited
All Other Except B, C Series and HHP Components	12	100,000/160,935/3,600
Electrics*	12	Unlimited
PX Injectors (for the M11, ISM, ISX, L10, N14, QSM11, QSX)	24	125,000/201,168/3,600
B & C Series Injectors and Fuel Pumps**	12	Unlimited
Premium Gold Cyl. Heads***	24	200,000/321,869/7,200
High-Volume Water Pumps	24	200,000/321,869/7,200
HHP Components	12	Unlimited

* ECMs are covered under respective components warranty (HD or B & C).

** Includes CAPS and VP44.

*** Some exclusions, see Warranty Administration Manual for applicable part numbers.

Note: The warranty terms described within this card are correct at time of printing, are subject to change without notice, and apply only to those products purchased within countries defined in red on this map. Exceptions may apply. Contact your local Cummins distributor/dealer for more details.



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Every™ Part. Genuine.

Cummins Warranty Quick Reference Guide

Northeast and Southeast Asia

Cummins Engines

Automotive Engines	Months	Mileage/Km/Hrs
B/ISB/B5.9G/ISD/B Gas	12	Unlimited
C8.3/ISC/ISL/C & L Gas	12	100,000/160,935
L10/M11/ISM/N14/ISX	12	100,000/160,935
Worldwide Fire Truck	60	100,000/160,935
All Buses	24	Unlimited

Industrial/Marine/Gen-Drive	Months	Hours
All Industrial Engines*	24	2,000
Worldwide Marine, Commercial Propulsion and Auxiliary Products**	12	
Worldwide Generator Drives**	12/24	
Worldwide HHP Lean-Burn Gaseous-Fuel Gen Sets**	12/18	
Worldwide A & B3.3 Welder Coverage*	36	3,000
CMD Diamond Recreational	24	600
CMD Quantum Recreational (QSB5.9/QSC8.3/QSL9/QSM11)	24	1,000
CMD Quantum Commercial (QSB5.9/QSC8.3/QSL9/QSM11)**	24	
CMD Commercial**	24	

*If 2,000 hours are surpassed during the first year, coverage continues until the end of the first year.

**Coverage based on application. See Warranty Administration Manual for details.

The EXTENDED MAJOR COMPONENTS WARRANTY covers major components (registered parts only) on new engines as follows:

L10/M11/ISM/N14/ISX/Signature automotive engines – 5 years/ 500,000 miles/804,672 km

Industrial engines – 3 years/10,000 hours

All buses – 3 years/10,800 hours/300,000 miles/482,805 km

Injector coverage for L10/M11/ISM/N14/ISX/Signature automotive engines is 2 years/125,000 miles/201,169 km

The Extended Major Components Warranty is available on HHP engines 19L and above. Coverage begins with the expiration of the Base Warranty and ends at 3 years, 300,000 miles (482,804 km), or 10,800 hours.

Cummins Service Products

Genuine Tools	Lifetime	Repair or Replace
Electrical Products, Instrumentation, Gauges, Motors and Consumables	12 Months	Repair or Replace
Non-Genuine Tools	Manufacturer's Warranty Applies	

(Refer to Page i-3 of the Cummins Service Products Catalog, Bulletin 3377710-03, for details.)

Genuine Cummins New Parts

Components	Months	Mileage/Km/Hrs
N Series/L10/M11/ISM/ISX	12	100,000/160,935/3,600
4B/6B/6C/ISC/ISL	6	Unlimited
HHP Components	12	Unlimited
RoadRelay™ 4	90 Days	Labor/Parts
RoadRelay™ 3	90 Days	Labor/Parts
QuickCheck	90 Days	Parts Only
Cummins Cylinder Kits:		
- Dual Ni TriTech® Plus and all 1991 and newer N14	36	300,000/482,804/10,800
- Single Ni TriTech Plus	24	200,000/321,869/7,200
- Dual Ni TriTech®	36	300,000/482,804/10,800
CENTINEL™ On-Highway	24	250,000/402,336/3,600
CENTINEL Off-Highway	12	Unlimited
Exhaust Brake		
- Brake Assembly	36	Unlimited
- System Components	12	Unlimited
Cummins C Brake	12	100,000/160,935/3,600
C Brake™ by Jacobs®* and Cummins-Applied Jake Brake®*		
- Machined Housing	60	500,000/804,672
- Housing Assembly	36	300,000/482,804
- System Components (harnesses, seals, O-rings, gaskets and switches)	12	100,000/160,935

*C Brake is a trademark of Cummins Inc.
Jacobs and Jake Brake are registered trademarks of Jacobs Vehicle Systems.