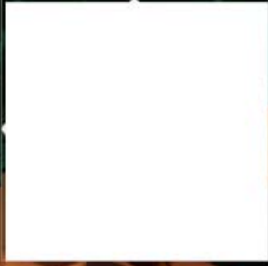


Engine Parts For: Cummins, Perkins, Caterpillar, Volvo, GE Jenbacher, Deutz, MWM, Waukesha, Rolls Royce, Wartsila and many more engine applications:

APDPB-002



**APD Products for Caterpillar®
3508/3512/3516/3524
DIESEL AND NATURAL GAS ENGINES**

The Standard for Quality, Innovation, Service and Support Since 1955



APD A SAFE AND SECURE INVESTMENT

Since 1955, APD has lowered owner's of Caterpillar® engines costs without sacrificing quality, engine life or performance by providing a cost effective quality product line alternative. Our robust product line covers a wide range of products for the 3114 up to 3524 series diesel and gas engines.

APD also recognizes the importance of repairing engines with quality products as these pieces of equipment or machines are an investment and source of revenue for their owners, and we do not take that lightly. We use only quality materials and with over 55 plus years of manufacturing experience we have in place an excellent and extensive QC process to ensure our products pass our high quality assurance standards before being shipped to customers. Additionally, our comprehensive and clearly stated warranties give our customers the needed peace of mind when purchasing APD products because they know they are covered and protected.

APD is ISO9001:2008 certification by Lloyd's Register®, who is recognized and respected worldwide for high standards of technical competence, impartiality and independence. Being ISO9001:2008 certified provides our customers the assurance of a consistent experience with our compliance to the ISO controls and processes. The extent to which APD has developed its ISO process and made it a part of virtually every aspect of APD is uncommon practice in most companies in the aftermarket parts industry.

You can read more about APD quality and our differentiations at www.ipdparts.com. Thank you for taking the time to view this document and we appreciate the opportunity to prove to you what truly sets IPD apart from our competition.



APD 3500 SERIES PRODUCT LINE

APD has been producing high quality products for the 3500 series of engines since the early 1990's. With a complete range of products including gallery cooled pistons for diesel and natural gas applications as well as both induction hardened cylinder liners, heavy-duty copper alloy engine bearings and quality valve train components. Our robust product line makes APD a leader in providing the most complete range of products available in the aftermarket for these popular engines. Additionally, we carry a variety of miscellaneous internal bushings for rocker arms, accessory drive and oil pump bushings and other parts and components as outlined below and listed on the quick reference guide.

We also are aware of the many changes in specifications and metallurgies that are required between natural gas and other fuels such as landfill and other waste gas applications. Changes in valve and valve seat materials which are critical to maintaining the risk free alternative that APD can offer. At APD we only utilize the latest in materials and designs. Some of the items below are featured in this document with more detail and as our coverage expands often, please check with APD for any updates.



Items available from APD for 3500 series engines vary between applications and serial ranges but will generally include products such as:

- Pistons (aluminum and APD Steel™ one piece)
- Cylinder liners (induction heat treated!)
- Rings (specific to applications such as diesel or natural gas)
- Pins & retainers
- Liner o-rings
- Intake and exhaust valves
- Valve springs
- Valve seat inserts
- Valve guides
- Valve bridges
- OEM style gasket sets
- APD Style 123™ complete gasket sets
- Oil pump parts
- Water pump parts

TESTED AND PROVEN

APD is known industry-wide for our quality parts and excellent service. Our goal is to create consistent and positive interactions with our distributors and their customers from start to finish as well as offering reliable support after the sale. This starts by manufacturing APD brand parts from high quality materials, ensuring that each part has the correct specification and tolerances and has gone through a rigorous quality control process. Our attention to detail and quality truly makes APD stand out from our competition. Listed below are just a few examples of how APD ensures quality control and takes the necessary steps to produce top of the line product.

HOW OUR QC PROCESS WORKS

APD QUALITY

We produce our products from concept to execution. Our process begins with a drawing which ensures the verification of exact specifications and tolerances. As shown in a sample drawing of an inspection of a natural gas application piston.



Quality control of all APD aluminum diesel and natural gas pistons includes ultrasonic bond checks and critical dimension checks through the use of CMM and hand measuring equipment.

Cylinder liner dimensional control includes dozens of critical specifications, including inside and outside dimensions, flange specifications and an oring groove size checks, which is accomplished through tools such as a CMM, height gauge, hardness tester and surface analyzer.



Valve guides, seats and springs are all critical items in heavy duty engines that require extra care. Our valve inspection program includes checking vital measurements such as valve angles not to mention the critical metallurgies used today.



Shown here is our in-house tangential piston ring tension tester.

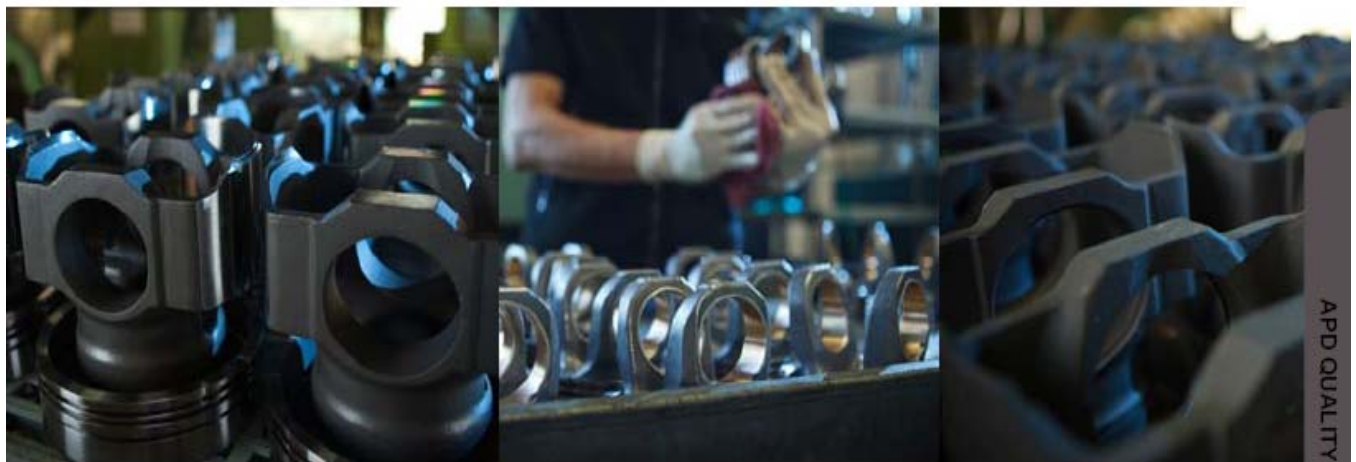


FROM CONCEPT, DESIGN TO MANUFACTURING

APDSTEEL™

Piston technology has evolved significantly over the years in order to keep up with increased cylinder pressures, performance and emissions requirements. APD has kept in sync with these evolutions as seen in our offering from our earlier aluminum pistons to our articulated two-piece designs and in our latest technology of APDSteel™ one piece steel pistons. In both natural gas and diesel applications materials, specifications and designs are increasingly critical for proper engine life and performance. Since 2003, APD has manufactured steel pistons in various versions and provided product for thousands of engines in many vocations, applications and markets worldwide.

APD began in the late 1990s working with world-class casting experts as well as independent metallurgy specialists to continue to evolve our APDSteel™ technology and apply it to the one piece steel applications. After the concept and designs were run through a variety of casting experts including independent metallurgical evaluations, APD also subcontracted an independent company specialized in testing cylinder power components as well as utilizing extensive field testing, both with exceptional results creating the APDSteel™ patent pending technology that is used today.



How it works: Utilizing modern casting processes when controlled properly along with the correct metallurgy and heat treating, offers increased performance over previous designs and methods.

Our patent pending process begins with a base metallurgy which includes a 4130 high strength alloy steel to control the carbon content of the material. This steel when heated properly has high strength qualities and controls brittleness assuring our rigid quality standards are adhered to.

Our patent pending process continues with a high quality investment casting using the lost wax process. The process is tightly controlled throughout to assure a high integrity casting.

X-ray diagnosis was utilized in the development process to assure casting integrity and ongoing sampling of castings assures our rigid quality standards are adhered to.

FEATURED PRODUCTS

Our product line for the 3500 series diesel and gas engines have many unique attributes that truly distinguishes us from our competition. Our patent pending one piece steel pistons, valve train and gasket sets program play an important role in our product offering, and showcase APD's commitment to innovation and quality. The following section will discuss in further detail some of the distinct APD product customization, value and quality.

APD, INNOVATION, NOT IMITATION

APD is proud to feature our one piece steel piston, which utilizes our IPDSteel™ patent pending technology for our 3500 series product line. Each piston is manufactured from the high strength alloy and heat treated steel casting process which has been extensively tested and successfully proven in the 3500 series applications.

These one piece steel pistons also showcase another way that APD truly sets the bar for innovation. In comparison to most aftermarket companies, who solely reengineer products from the originating company, APD stands apart. In partnering with our customers worldwide, IPD has enhanced upon the original design in eFAorts to create a better product.



Oil Gallery Retention Plate

The APDSteel™ one piece piston features new design enhancements made possible by IPD's patent pending one piece oil gallery retention plate. In order to prevent the piston from experiencing extreme thermal loading as seen in other products in the market place, this innovative one piece design limits plate movement and secures the oil gallery retention plate firmly in place as seen in example below.

FEATURED PRODUCT

APD ONE PIECE DAM PLATE



TRADITIONAL TWO PIECE DAM PLATE



FEATURED PRODUCTS

VALVE TRAIN

At APD, our valve train products offer customers a safe and cost effective alternative. Our valve train product is developed from materials specifically designed for diesel and natural gas applications and not from automotive grade materials, a common aftermarket industry practice. IPD puts quality above our cost savings which gives our customers the assurance that they aren't exposing their equipment to risk that could potentially decrease cylinder head life expectancy. Our valve guides maintain uniformed dimensions, knurling and tight tolerances to achieve maximum valve cooling and oil control, as well as valve springs made from the highest quality steel, correct tensions and shot-penned for strength and long service life.



APD GASKET MATERIALS AND TECHNOLOGY



The quality of our materials at APD defines our gasket program. Many aftermarket gasket manufacturers compromised the quality of their gaskets by using materials not intended to work under the extreme conditions that most diesel and natural gas engines are subject to. These lighter duty materials will lead to reduced sealing capability or in more extreme cases, lower engine performance and engine life.

APD use the latest materials and verify through our rigorous QC process that each part number receives the correct material specification for the application. Critical tests and measurements are applied to all of our gasket materials to assure that there are not performance issues within our program. Some of these include:

Creep Relaxation

This indicates the ability of the material to retain its original bolt torque specification after exposure to stress.

Crush Resistance Density

Crushing or extrusion can occur when compressive forces exceed the point where the gasket materials pore volume is zero, resulting in leakage.

Tensile Strength

This is a measurement of the materials resistance to blow out when used in high pressure or high torque applications.

FEATURED PRODUCTS

APD GASKET PROGRAM

We realize that demands can differ between markets or applications so we offer two distinct gasket systems:

Modular Original Style Multiple Sets

These sets are based on the same multiple groups that you might be accustomed to from the OEM. They are specific to an engine arrangement or a close grouping of arrangements and serial numbers. Many times when ordering the Modular Original style multiple sets, you must order multiple part numbers (possibly up to 8 or 9 or more sets) to rebuild your engine as they can lack the items that are commonly replaced or needed to reinstall a component. APD offers a unique and custom gasket set to alleviate these issues.

APDStyle 123™ Consolidated Sets



FEATURED PRODUCT

For years APD customers complained of the difficulty of ordering, shipping and inventorying the Aoriginal style multiple sets. In the late 1980' APD developed and customized our special sets to:

- Reduce APD distributors and rebuilder's inventory by consolidating a wider range of serial and arrangements than was possible with the original style multiple sets.
- Reduce the time to order and stock many different multiple style sets in order to cover a wider range of equipment and engines.
- Packaging APDStyle 123™ with individual groupings based on the engine component or the location of the gaskets on the engines in easy to identify bags.
- Marking all gaskets and orings clearly with the part numbers for easy identification reducing engine technician s time to find the proper part
- APDStyle 123™ sets are designed from ground up with help from our customers that rebuild these engines. Do not confuse these with other companies that simply put all the multiple sets into one box and call it consolidated, still lacking critical items or duplicating pieces.

QUICK REFERENCE GUIDE FOR APD 3500 SERIES PRODUCTS

DESCRIPTION	APD PART NUMBER	DIESEL OR GAS	NOTES
CYLINDER COMPONENTS			
Cylinder Kit-APDSteel	PLG2995204	Diesel	Includes APDSteel™ piston, Heat Treated Liner, Rings, Pin, Retainers & Liner seals
Cylinder Kit-APDSteel	PLG3145005	Diesel	Includes APDSteel™ piston, Heat Treated Liner, Rings, Pin, Retainers & Liner seals
Cylinder Kit-13.0:1 Compression Ratio	PLG7C2431	Diesel	Includes Piston, Liner, Rings, Pin, Retainers & Liner Seals, Induction Heat Treated Liner
Cylinder Kit-13.5:1 Compression Ratio	PLG9Y2100HD	Diesel	Includes Piston, Liner, Rings, Pin, Retainers & Liner Seals, Induction Heat Treated Liner
Cylinder Kit-13.0:1 Comp. Ratio/ Thick Flange Liner	PLG9Y4124HD	Diesel	Includes Piston, Liner, Rings, Pin, Retainers & Liner Seals, Induction Heat Treated Liner
Cylinder Kit- 13.0:1 Comp. Ratio/Narrow Flange Liner	PLG9Y4124HD/ NF	Diesel	Includes Piston, Liner, Rings, Pin, Retainers & Liner Seals, Induction Heat Treated Liner
Cylinder Kit-8.0:1 Compression Ratio	PLG1014140	Gas	Includes Piston, Liner, Rings, Pin, Retainers & Liner Seals, Induction Heat Treated Liner
Cylinder Kit-11.0:1 Compression Ratio	PLG6I4609	Gas	"Dual Ni-Ring Insert" - Includes Piston, Liner, Rings, Pin, Retainers & Liner Seals, Induction Heat Treated Liner
Cylinder Kit-11.0:1 Compression Ratio	PLG1973765	Gas	"Single Ni-Ring insert"- Available mid 2010, For select engine operating at or above 1500 RPM"
Piston - APDSteel™ ONE Piece Steel Piston	2995204	Diesel	Available in PLG Cylinder Kits only
Piston - APDSteel™ ONE Piece Steel Piston	3145005	Diesel	Available in PLG Cylinder Kits only
Piston 13.0:1 Compression Ratio	7C2431	Diesel	
Piston 13.5:1 Compression Ratio	9Y2100HD	Diesel	
Piston 13.0:1 Compression Ratio	9Y4124HD	Diesel	
Piston 8.0:1 Compression Ratio	1014140	Gas	
Piston 11.0:1 Compression Ratio	6I4609	Gas	
Piston 11.0:1 Compression Ratio	1973765	Gas	Available mid 2010
Liner, Cyl. 6.69 Bore	1106993	Diesel/Gas	Thick Flange, Induction Heat Treated
Liner, Cyl. 6.69 Bore	1238206	Diesel/Gas	Narrow Flange, Induction Heat Treated
Ring Set	RS3500D	Diesel	
Ring Set	7E2899	Gas	
Ring Set	3500RS1	Diesel	
Piston Pin	1388506	Diesel/Gas	
Piston Pin	2638955	Diesel	(1 pc. Steel pistons only)
Piston Pin Retainer	8N7296	Diesel/Gas	
Piston Pin Retainer	2531238	Diesel	(1 pc. Steel pistons only)
Liner Seal Set	6V3774	Diesel/Gas	Includes 3 liner seals and 1 band seal

QUICK REFERENCE GUIDE FOR APD 3500 SERIES PRODUCTS

DESCRIPTION	APD PART NUMBER	DIESEL OR GAS	NOTES
VALVE TRAIN & CYLINDER HEAD COMPONENTS			
Lifter	2636679	Diesel/Gas	Lifter Assembly
Lifter, Repair Kit	2636679RK	Diesel/Gas	Lifter Repair Kit, Includes Pin and Roller
Bridge, Valve	2657538	Diesel/Gas	Exhaust
Bridge, Valve	2657537	Diesel/Gas	Intake
Button, Rocker Arm	8F8858	Diesel/Gas	
Ring, Rocker Arm	9F7707	Diesel/Gas	
Screw, Rocker Arm Adjusting	2002003	Diesel/Gas	
Bushing, Rocker Arm	1W4594	Diesel/Gas	
Bushing, Rocker Arm	2302620	Diesel	Late style
Valve, Intake and Exhaust	7E4609	Diesel	30 , Intake and Exhaust in early engines
Valve, Exhaust	1219839	Diesel	30 Exhaust valve w/tapered stem-Later engines
Valve, Exhaust	1219835	Diesel	45 Exhaust valve
Valve, Exhaust	1944897	Diesel	1/2" valve stem. Updated from the 1219835
Valve, Intake and Exhaust	1047184	Diesel/Gas	20 valve with Chrome Stem for use as Intake and Exhaust
Guide, Valve	1339306	Diesel	3/8" Intake and Exhaust/Non-counter bored
Guide, Valve	9Y1847	Diesel/Gas	3/8" Intake/Counter bored for extra oiling
Guide, Valve	1976995	Diesel	1/2" Exhaust- used with 1944897 valve
Guide, Valve	1491982	Diesel	3/8", .005 Oversized
Guide, Valve	1665944	Diesel	3/8", .020 Oversized
Guide, Valve	2763875	Diesel	Exhaust, .127 mm O.S./O.D.
Guide, Valve	2763876	Diesel	
Guide, Valve	9Y1846	Gas	Exhaust (non landfill
Guide, Valve	9Y1847	Gas	Intake (non landfill
Guide, Valve	1845494	Gas	Exhaust (non landfill
Guide, Valve	1845495	Gas	Intake (landfill
Spring, Valve	1011177	Diesel	Inner
Spring, Valve	1011180	Diesel	Outer
Lock, Valve	2A4429	Diesel/Gas	Intake/Exhaust (3/8" valves)
Lock, Valve	1977055	Diesel	Exhaust (1/2" exhaust valve only)
Rotocoil	1976999	Diesel/Gas	Intake/Exhaust-without shield
Rotocoil	1977062	Diesel/Gas	Intake
Rotocoil	1977063	Diesel/Gas	Exhaust
Insert, Valve Seat	1302607	Diesel	20 Intake
Insert, Valve Seat	1302608	Diesel	45 Exhaust
Insert, Valve Seat	611713	Gas	20 Intake/Exhaust with 2.367" O.D. and .460" Depth
Insert, Valve Seat	1225963	Gas	20 Intake with swirl plate

QUICK REFERENCE GUIDE FOR APD 3500 SERIES PRODUCTS

DESCRIPTION	APD PART NUMBER	DIESEL OR GAS	NOTES
BEARINGS			
Connecting Rod Bearing	1077330	Diesel/Gas	Standard
Connecting Rod Bearing	1077331	Diesel/Gas	0.025"
Main Bearing	1496031	Diesel/Gas	Standard
Main Bearing	1496032	Diesel/Gas	0.025"
Thrust Plate	7C6209	Diesel/Gas	
Cam Bearing	7N2048	Diesel/Gas	Early Style
Cam Bearing	1161359	Diesel/Gas	Late "B" Block with an "A" cam
Cam Bearing	1011198	Diesel/Gas	Late "B" Block with a "B" cam
Bushing, Connecting Rod	1181655	Diesel/Gas	
COOLING AND LUBRICATION SYSTEM			
Cooler Core, Oil	1245142	Diesel/Gas	
NEW Water Pump	2128177	Diesel/Gas	3512 & 3516 select applications
Water Pump Rebuild Kit	2225152	Diesel/Gas	Kit includes shaft and impeller. Covers 2128172, 2128177, 0R9673, 0R9671, 10R1671 and 10R1669 pumps
Water Pump Rebuild Kit	2225153	Diesel/Gas	Kit includes shaft and impeller. Covers 1664380, 1664377, 2128175, 2128176, 0R9670, 0r9672, 10R1668 and 10R1670 pumps
Water Pump Rebuild Kit	2219278	Diesel/Gas	Kit includes shaft and impeller. Covers 613520, 7E9781, 7E9782, 2128168, 2128169, 2128166, 0R3192 and 0R4570 pumps
Regulator	614954	Diesel/Gas	170 F
Regulator	2477133	Gas	190 F (OLD # 7C3095)
MISCELLANEOUS ITEMS AVAILABLE FROM IPD			
STEEL Spacer Plate	2603904	Diesel/Gas	Can replace aluminum spacer plates
NEW Cartridge, Turbo	1182988	Diesel/Gas	
NEW Cartridge, Turbo	7W3570	Diesel/Gas	
APDStyle 123 Gasket Sets	This exclusive, APD Innovation offers the engine rebuilder a variety of engine gasket kits specifically designed to perform a function such as head r placement, in-frame or out of frame overhauls by providing the required gaskets and seals to perform the job		
OE Style Multiple Gasket Groups	APD offers a full range of the "OE" style multiple groups such as upper, lower, front, rear etc.		

APD Products for Natural Gas Engines Parts

Caterpillar® G3304
Caterpillar® G3306
Caterpillar® G3406
Caterpillar® G3408
Caterpillar® G3412
Caterpillar® G3508
Caterpillar® G3512
Caterpillar® G3516
Caterpillar® **G342**
Caterpillar® G342
Caterpillar® G353
Caterpillar® G379
Caterpillar® G398
Caterpillar® G399

APD Parts (Engine Application) Pagege

Caterpillar® G3508 Engines	41
Caterpillar® G3512 Engines	44
Caterpillar® G3516 Engines	47

APD parts for Caterpillar® G3508 Engines

VALVE TRAIN AND CYLINDER HEAD COMPONENTS			
DESCRIPTION	PART NUMBER	QTY. REQ.	COMMENTS
Valve, Intake and Exhaust	1047184	32	20 Degree
Valve, Intake and Exhaust	3089177	32	LANDFILL ONLY
Lock, Valve	2A4429	64	
Spring, Inner Valve	7N1903	32	
Spring, Outer Valve	7N1904	32	
Rotocoil	1976999	32	
Guide, Intake	9Y1847	16	
Guide, Exhaust	9Y1846	16	
Guide, Intake Methane (Landfill)	1845495	16	
Guide, Exhaust Methane (Landfill)	1845494	16	
Seal, Valve Stem Methane	1977006	32	
Insert, Intake and Exhaust	6I1713	32	.460" Depth
Plug Cup	3B0623	40	25.73 mm OD
Seal, O-Ring	3J7354	8	
Plug Cup	3B0645	40	32.08 mm OD
Water Seal	2045426	32	
Water Seal	2045427	32	
Lifter, Valve	2636679	16	
Repair Kit, Valve Lifter	2636679RK	A/R	
Spring, Lifter Guide	7N4782	16	Lifter Clip
Rocker Arm Button	8F8858	16	
Retaining Ring	9F7707	16	
Screw, Rocker Arm Adjusting	2002003	16	
GASKET SETS AND MISCELLANEOUS GASKETS			
Overhaul Gasket Set	508031	1	2JF1-UP Magneto With Wet Manifold
Overhaul Gasket Set	508041	1	9TG1-UP,4WD1-UP Wet Manifold
Multiple Cylinder Head Gasket Set	508033	1	2JF1-UP Magneto With Wet Manifold
Multiple Cylinder Head Gasket Set	508043	1	9TG1-UP,4WD1-UP Wet Manifold
Single Cylinder Head Gasket Set	508044EM	8	E.I.S. And Magneto Ignition Systems
Single Cylinder Head Gasket Set	516114	8	Dry Ceramic Manifold
Oil Pan Gasket	7E2631	1	
Block Side Cover Seal	2720757	8	
Camshaft Cover Seal	2720758	8	
Valve Cover Seal	2720759	8	

ENGINE BEARINGS AND BUSHINGS			
DESCRIPTION	PART NUMBER	QTY. REQ.	COMMENTS
Main Bearing Standard	1496031	5	
Main Bearing .025"	1050254	A/R	
Rod Bearing Standard	1077330	8	
Rod Bearing .025"	1077331	A/R	
Thrust Plate	7C6209	2	
Cam Bearing	7N2048	10	Early Style
Cam Bearing	1161359	10	Late Style
Bushing, Connecting Rod	1181655	8	
Idler Bushing	8N5301	1	
Bushing, Rocker Arm	1W4594	16	
CYLINDER KITS AND COMPONENTS			
Piston and Liner Assembly	PLG1014140	8	8.0:1 Compression Ratio
Piston and Liner Assembly	PLG6I4609	8	11.0:1 Compression Ratio
Piston Body	1014140	8	8.0:1 Compression Ratio
Piston Body	6I4609	8	11.0:1 Compression Ratio
Ring Group	7E2899	8	
Liner, Cylinder	1106993	8	8.3317" (Thick Flange)
Liner, Cylinder	1238206	8	8.1500" (Thin Flange)
Pin, Piston	1388506	8	
Retainer, Piston Pin	8N7296	16	
Gasket Kit (Liner O Rings and Seal)	6V3774	8	Contains 3-7N2046 And 1-8N4707
COOLING SYSTEM COMPONENTS			
Regulator, Water Temperature	6I4950	4	180 Degree
Regulator, Water Temperature	7C3095	4	190 Degree
Regulator, Water Temperature	2485513	4	180 Degree New Sealed Design
Regulator, Water Temperature	2477133	4	190 Degree New Sealed Design
Seal, Regulator	3S9643	4	

COOLING SYSTEM COMPONENTS Continued			
DESCRIPTION	PART NUMBER	QTY. REQ.	COMMENTS
Water Pump Groups 6I3520, 7E9781, 7E9782, 2128168, 2128169, 2128166			
<i>Water Pump Rebuild Kit</i>	2219278	1	Contains items below
Seal Group - Basic	4W3864	1	With Correct Water Pump Group
Washer - Thrust	5N4383	2	With Correct Water Pump Group
Shim-Carrier	8M2933	4	With Correct Water Pump Group
Seal-Lip Type	9X4594	1	With Correct Water Pump Group
Bearing-Sleeve	1275400	1	With Correct Water Pump Group
Shaft (Straight Joint Press Fit)	2128179	1	With Correct Water Pump Group
Impeller (Press Fit)	2128183	1	With Correct Water Pump Group
Water Pump Groups 1664381, 1664378, 2128172, 2128177			
<i>Water Pump Rebuild Kit</i>	2225152	1	Contains items below
Bolt	0S1618	2	With Correct Water Pump Group
Seal-O-Ring	3D2824	1	With Correct Water Pump Group
Filter	4N5834	2	With Correct Water Pump Group
Washer - Thrust	7N4758	1	With Correct Water Pump Group
Seal-Lip Type	8C5236	1	With Correct Water Pump Group
Washer-Hard	9M1974	2	With Correct Water Pump Group
Ring As.	1664374	1	With Correct Water Pump Group
Seal Gp-E	1664376	1	With Correct Water Pump Group
Shaft (Straight Joint Press Fit)	2128180	1	With Correct Water Pump Group
Impeller (Press Fit)	2128184	1	With Correct Water Pump Group
Water Pump Groups 1664380, 1664377, 2128175, 2128176			
<i>Water Pump Rebuild Kit</i>	2225153	1	Contains items below
Bolt	0S1618	2	With Correct Water Pump Group
Seal-O-Ring	3D2824	1	With Correct Water Pump Group
Filter	4N5834	2	With Correct Water Pump Group
Washer - Thrust	7N4758	1	With Correct Water Pump Group
Seal-Lip Type	8C5236	1	With Correct Water Pump Group
Washer-Hard	9M1974	2	With Correct Water Pump Group
Ring As.	1664374	1	With Correct Water Pump Group
Seal Gp-E	1664376	1	With Correct Water Pump Group
Shaft (Straight Joint Press Fit)	2128180	1	With Correct Water Pump Group
Impeller (Press Fit)	2128187	1	With Correct Water Pump Group
CRANKSHAFT COMPONENTS			
Seal, Crankshaft Front	1138432	1	Standard Rotation
Seal, Crankshaft Rear	1138433	1	Standard Rotation

APD parts for Caterpillar® G3512 Engines

VALVE TRAIN AND CYLINDER HEAD COMPONENTS			
DESCRIPTION	PART NUMBER	QTY. REQ.	COMMENTS
Valve, Intake and Exhaust	1047184	48	20 Degree
Valve, Intake and Exhaust	3089177	48	LANDFILL ONLY
Lock, Valve	2A4429	96	
Spring, Inner Valve	7N1903	48	
Spring, Outer Valve	7N1904	48	
Rotocoil	1976999	48	
Guide, Intake	9Y1847	24	
Guide, Exhaust	9Y1846	24	
Guide, Intake Methane (Landfill)	1845495	24	
Guide, Exhaust Methane (Landfill)	1845494	24	
Seal, Valve Stem Methane	1977006	24	
Insert, Intake and Exhaust	6I1713	48	.460" Depth
Plug Cup	3B0623	60	25.73 mm OD
Seal, O-Ring	3J7354	24	
Plug Cup	3B0645	60	32.08 mm OD
Water Seal	2045426	48	
Water Seal	2045427	48	
Lifter, Valve	2636679	24	
Repair Kit, Valve Lifter	2636679RK	24	
Spring, Lifter Guide	7N4782	24	Lifter Clip
Rocker Arm Button	8F8858	24	
Retaining Ring	9F7707	24	
Screw, Rocker Arm Adjusting	2002003	24	
GASKET SETS AND MISCELLANEOUS GASKETS			
Overhaul Gasket Set	512011	1	4KC1-UP Magneto Ignition
Overhaul Gasket Set	512021	1	5JD1-UP Electronic Ignition
In Frame Gasket Set	512012	1	4KC1-UP Magneto Ignition
In Frame Gasket Set	512022	1	5JD1-UP Electronic Ignition
Multiple Cylinder Head Gasket Set	512013	1	4KC1-UP Magneto Ignition
Multiple Cylinder Head Gasket Set	512023	1	5JD1-UP Electronic Ignition
Multiple Cylinder Head Gasket Set	512113	1	5JD1-UP , 7NJ1-UP Late E.I.S.
Single Cylinder Head Gasket Set	508044EM	12	E.I.S. And Magneto Ignition Systems
Single Cylinder Head Gasket Set	516114	12	Dry Ceramic Manifold
Oil Pan Gasket	7E2631	1	
Block Side Cover Seal	2720757	12	
Camshaft Cover Seal	2720758	12	
Valve Cover Seal	2720759	12	

ENGINE BEARINGS AND BUSHINGS			
DESCRIPTION	PART NUMBER	QTY. REQ.	COMMENTS
Main Bearing Standard	1496031	7	
Main Bearing .025"	1050254	A/R	
Rod Bearing Standard	1077330	12	
Rod Bearing .025"	1077331	A/R	
Thrust Plate	7C6209	2	
Cam Bearing	7N2048	14	Early Style
Cam Bearing	1161359	14	Late Style
Bushing, Connecting Rod	1181655	12	
Idler Bushing	8N5301	1	
Bushing, Rocker Arm	1W4594	24	
CYLINDER KITS AND COMPONENTS			
Piston and Liner Assembly	PLG1014140	12	8.0:1 Compression Ratio
Piston and Liner Assembly	PLG6I4609	12	11.0:1 Compression Ratio
Piston Body	1014140	12	8.0:1 Compression Ratio
Piston Body	6I4609	12	11.0:1 Compression Ratio
Ring Group	7E2899	12	
Liner, Cylinder	1106993	12	8.3317" (Thick Flange)
Liner, Cylinder	1238206	12	8.1500" (Thin Flange)
Pin, Piston	1388506	12	
Retainer, Piston Pin	8N7296	24	
Gasket Kit (Liner O Rings and Seal)	6V3774	12	Contains 3-7N2046 And 1-8N4707
COOLING SYSTEM COMPONENTS			
Regulator, Water Temperature	6I4950	4	180 Degree
Regulator, Water Temperature	7C3095	4	190 Degree
Regulator, Water Temperature	2485513	4	180 Degree New Sealed Design
Regulator, Water Temperature	2477133	4	190 Degree New Sealed Design
Seal, Regulator	3S9643	4	

COOLING SYSTEM COMPONENTS Continued			
DESCRIPTION	PART NUMBER	QTY. REQ.	COMMENTS
Water Pump Groups 6I3520, 7E9781, 7E9782, 2128168, 2128169, 2128166			
<i>Water Pump Rebuild Kit</i>	2219278	1	Contains items below
Seal Group - Basic	4W3864	1	With Correct Water Pump Group
Washer - Thrust	5N4383	2	With Correct Water Pump Group
Shim-Carrier	8M2933	4	With Correct Water Pump Group
Seal-Lip Type	9X4594	1	With Correct Water Pump Group
Bearing-Sleeve	1275400	1	With Correct Water Pump Group
Shaft (Straight Joint Press Fit)	2128179	1	With Correct Water Pump Group
Impeller (Press Fit)	2128183	1	With Correct Water Pump Group
Water Pump Groups 1664381, 1664378, 2128172, 2128177			
<i>Water Pump Rebuild Kit</i>	2225152	1	Contains items below
Bolt	0S1618	2	With Correct Water Pump Group
Seal-O-Ring	3D2824	1	With Correct Water Pump Group
Filter	4N5834	2	With Correct Water Pump Group
Washer - Thrust	7N4758	1	With Correct Water Pump Group
Seal-Lip Type	8C5236	1	With Correct Water Pump Group
Washer-Hard	9M1974	2	With Correct Water Pump Group
Ring As.	1664374	1	With Correct Water Pump Group
Seal Gp-E	1664376	1	With Correct Water Pump Group
Shaft (Straight Joint Press Fit)	2128180	1	With Correct Water Pump Group
Impeller (Press Fit)	2128184	1	With Correct Water Pump Group
Water Pump Groups 1664380, 1664377, 2128175, 2128176			
<i>Water Pump Rebuild Kit</i>	2225153	1	Contains items below
Bolt	0S1618	2	With Correct Water Pump Group
Seal-O-Ring	3D2824	1	With Correct Water Pump Group
Filter	4N5834	2	With Correct Water Pump Group
Washer - Thrust	7N4758	1	With Correct Water Pump Group
Seal-Lip Type	8C5236	1	With Correct Water Pump Group
Washer-Hard	9M1974	2	With Correct Water Pump Group
Ring As.	1664374	1	With Correct Water Pump Group
Seal Gp-E	1664376	1	With Correct Water Pump Group
Shaft (Straight Joint Press Fit)	2128180	1	With Correct Water Pump Group
Impeller (Press Fit)	2128187	1	With Correct Water Pump Group
CRANKSHAFT COMPONENTS			
Seal, Crankshaft Front	1138432	1	Standard Rotation
Seal, Crankshaft Rear	1138433	1	Standard Rotation

APD parts for Caterpillar® G3516 Engines

VALVE TRAIN AND CYLINDER HEAD COMPONENTS			
DESCRIPTION	PART NUMBER	QTY. REQ.	COMMENTS
Valve, Intake and Exhaust	1047184	64	20 Degree
Valve, Intake and Exhaust	3089177	64	LANDFILL ONLY
Lock, Valve	2A4429	128	
Spring, Inner Valve	7N1903	64	
Spring, Outer Valve	7N1904	64	
Rotocoil	1976999	64	
Guide, Intake	9Y1847	32	
Guide, Exhaust	9Y1846	32	
Guide, Intake Methane (Landfill)	1845495	32	
Guide, Exhaust Methane (Landfill)	1845494	32	
Seal, Valve Stem Methane	1977006	32	
Insert, Intake and Exhaust	6I1713	64	.460" Depth
Plug Cup	3B0623	80	25.73 mm OD
Seal, O-Ring	3J7354	32	
Plug Cup	3B0645	80	32.08 mm OD
Water Seal	2045426	64	
Water Seal	2045427	64	
Lifter, Valve	2636679	32	
Repair Kit, Valve Lifter	2636679RK	A/R	
Spring, Lifter Guide	7N4782	32	Lifter Clip
Rocker Arm Button	8F8858	32	
Retaining Ring	9F7707	32	
Screw, Rocking Arm Adjusting	2002003	32	
GASKET SETS AND MISCELLANEOUS GASKETS			
Overhaul Gasket Set	516011	1	3RC 1-UP Magneto Ignition
Overhaul Gasket Set	516021	1	8LD 1-UP, 4EK 1-UP E.I.S. Wet Manifold
Overhaul Gasket Set	516111	1	8LD 1-UP, 4EK 1-UP E.I.S. Dry Manifold
In Frame Gasket Set	516012	1	3RC 1-UP Magneto Ignition
In Frame Gasket Set	516022	1	8LD 1-UP, 4EK 1-UP E.I.S.
Multiple Cylinder Head Gasket Set	516013	1	3RC 1-UP Magneto Ignition
Multiple Cylinder Head Gasket Set	516023	1	8LD 1-UP, 4EK 1-UP E.I.S. Wet Manifold
Multiple Cylinder Head Gasket Set	516113	1	8LD 1-UP, 4EK 1-UP E.I.S. Wet Manifold
Single Cylinder Head Gasket Set	508044EM	16	E.I.S. And Magneto Ignition Systems
Single Cylinder Head Gasket Set	516114	16	Dry Ceramic Manifold
Oil Pan Gasket	7E2631	1	
Block Side Cover Seal	2720757	16	
Camshaft Cover Seal	2720758	16	
Valve Cover Seal	2720759	16	

ENGINE BEARINGS AND BUSHINGS			
DESCRIPTION	PART NUMBER	QTY. REQ.	COMMENTS
Main Bearing Standard	1496031	9	
Main Bearing .025"	1050254	A/R	
Rod Bearing Standard	1077330	16	
Rod Bearing .025"	1077331	A/R	
Thrust Plate	7C6209	2	
Cam Bearing	7N2048	18	Early Style
Cam Bearing	1161359	18	Late Style
Bushing, Connecting Rod	1181655	16	
Idler Bushing	8N5301	1	
Bushing, Rocker Arm	1W4594	32	
CYLINDER KITS AND COMPONENTS			
Piston and Liner Assembly	PLG1014140	16	8.0:1 Compression Ratio
Piston and Liner Assembly	PLG6I4609	16	11.0:1 Compression Ratio
Piston Body	1014140	16	8.0:1 Compression Ratio
Piston Body	6I4609	16	11.0:1 Compression Ratio
Ring Group	7E2899	16	
Liner, Cylinder	1106993	16	8.3317" (Thick Flange)
Liner, Cylinder	1238206	16	8.1500" (Thin Flange)
Pin, Piston	1388506	16	
Retainer, Piston Pin	8N7296	32	
Gasket Kit (Liner O Rings and Seal)	6V3774	16	Contains 3-7N2046 And 1-8N4707
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Seal, Regulator	3S9643	4	

COOLING SYSTEM COMPONENTS Continued			
DESCRIPTION	PART NUMBER	QTY. REQ.	COMMENTS
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<i>Water Pump Rebuild Kit</i>	2219278	1	Contains items below
Seal Group - Basic	4W3864	1	With Correct Water Pump Group
Washer - Thrust	5N4383	2	With Correct Water Pump Group
Shim-Carrier	8M2933	4	With Correct Water Pump Group
Seal-Lip Type	9X4594	1	With Correct Water Pump Group
Bearing-Sleeve	1275400	1	With Correct Water Pump Group
Shaft (Straight Joint Press Fit)	2128179	1	With Correct Water Pump Group
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Seal-Lip Type	8C5236	1	With Correct Water Pump Group
Washer-Hard	9M1974	2	With Correct Water Pump Group
Ring As.	1664374	1	With Correct Water Pump Group
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Shaft (Straight Joint Press Fit)	2128180	1	With Correct Water Pump Group
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<i>Water Pump Rebuild Kit</i>	2225153	1	Contains items below
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Seal-O-Ring	3D2824	1	With Correct Water Pump Group
Filter	4N5834	2	With Correct Water Pump Group
Washer - Thrust	7N4758	1	With Correct Water Pump Group
Seal-Lip Type	8C5236	1	With Correct Water Pump Group
Washer-Hard	9M1974	2	With Correct Water Pump Group
Ring As.	1664374	1	With Correct Water Pump Group
Seal Gp-E	1664376	1	With Correct Water Pump Group
Shaft (Straight Joint Press Fit)	2128180	1	With Correct Water Pump Group
Impeller (Press Fit)	2128187	1	With Correct Water Pump Group
CRANKSHAFT COMPONENTS			
Seal, Crankshaft Front	1138432	1	Standard Rotation
Seal, Crankshaft Rear	1138433	1	Standard Rotation

APD ENGINE MODEL SUMMARY

CATERPILLAR®

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G3304 / G3306 / G333
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D379 / D398 / D399
G379 / G398 / G399
D353 / G353
D339 / D342 / G342
D343 / D346 / D348
C15
C12

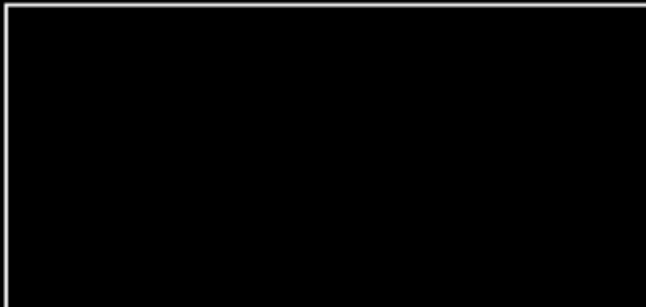
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