



**IPD Products for Caterpillar®  
3400 & C15 SERIES ENGINES**

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

# IPD PARTS FOR 3400 & C15 SERIES

Coverage and options so that you can determine how most efficiently to overhaul your engine.

- ◆ In-frame and Out of Frame Overhaul Kits
- ◆ Crown-less kits (when reusing crowns)
- ◆ IPDSteel™ Pistons
- ◆ PLG (Piston & Liner Group or Cylinder Kit)
- ◆ Induction-Hardened & Crevice Seal Liners
- ◆ Valve Train Components
- ◆ Fuel System Components
- ◆ Crankshafts, Camshafts & Cam Followers
- ◆ Gasket Sets:
  - IPDStyle 1-2-3™ complete sets
  - Modular – OEM style sets
- ◆ Oil Coolers
- ◆ Water and Oil Pump Components
- ◆ Engine Bearings
- ◆ Miscellaneous parts (such as exhaust stud kits)
- ◆ Parts for older & newer "E" model applications
- ◆ **NEW...IPD Parts for C15 Acert**

## IPD COVERAGE FOR 3406 / 3408 / 3412 "HEUI" APPLICATIONS

IPD offers a wide range of parts for HEUI (Hydraulically Actuated Electronically Controlled Unit Injector) applications, including the following popular wear items:

- ◆ IPDStyle 1-2-3™ and Modular Style gasket sets
- ◆ Engine bearings and bushings
- ◆ Valve train components
- ◆ Water and oil pump components



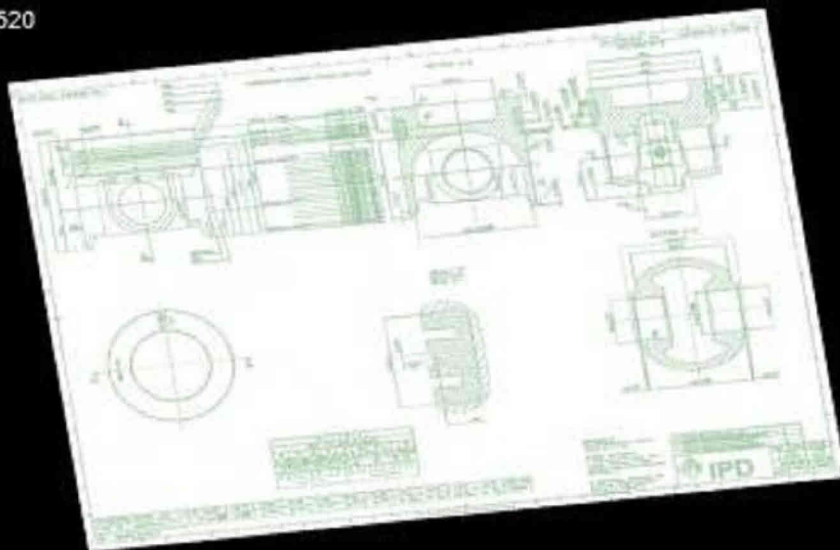
## NATURAL GAS AND METHANE APPLICATIONS FOR G3406 / G3408 / G3412 ENGINES

IPD also offers extensive coverage of these popular engines. The parts are produced from materials intended specifically for these critical applications. Some companies may offer products that fit these engines, but only IPD's years of experience can provide you with the consistent quality and life expectancy you need. IPD's over 50 years of manufacturing experience in the spark ignited industry has resulted in many long-time relationships with some of the best natural gas engine rebuilding specialists worldwide. Whether your company provides drilling, well servicing, natural gas compression, power generation, production or pipeline transmission...IPD supplies quality parts to provide performance and reliability for your specific application. IPD also supplies an extensive range of IPD products for these other Caterpillar® natural gas and methane applications as well:

- ◆ G3508 / G3512 / G3516 / G3520
- ◆ G3304 / G3306
- ◆ G379 / G398 / G399
- ◆ G342

*IPD designs, engineers, and controls manufacturing and quality assurance on critical products for natural gas and methane applications, such as the G3400 series piston shown in our drawing to the right.*

*Our product line continuously expands so please check with us often for new availability.*





Camshaft and connecting rod bushings, including  
oversize camshaft bushings for popular applications.



Exhaust manifold stud kits that include nuts and  
studs, packaged in convenient kits specific to 3406  
engines. Individual parts available for 3408 & 3412  
applications.



Water pump rebuild kits for popular applications.



Available from IPD are popular option such as  
cylinder kits and in-frame/out of frame overhaul  
engine kits. (IPDSteel™ articulated piston shown)



IPD offers a wide range of high quality forged steel  
crankshafts that receive multiple quality control  
checks for hardness, fillet radius specifications and  
straightness.



Camshafts and cam followers for popular applications.  
All held to the closest specifications and tolerances.  
More camshafts under development.

This is only a representation of our coverage, please contact your Customer Service Representative for further details. If you are an IPD Authorized Distributor, you can also access our on-line IPDNet™ parts cataloging and ordering system for up-to-date applications that are available from IPD.

## INNOVATION...NOT JUST IMITATION!

Most aftermarket companies are content with only offering "copycat" parts by attempting to duplicate the look of the original. IPD has taken the position since its inception to not only offer products that will perform as well as the original, but also to work with our customers world-wide to find ways to improve engine performance or engine life. This can result in greater savings in long-term cost per hour for engine owners. A few examples of IPD innovations are shown below specific to the IPD product range for 3406 / 3408 / 3412 & C15 applications:

### IPDSteel® ARTICULATED PISTONS



For years, engine rebuilders and engine owners have been forced to deal with only one source on newer applications utilizing articulated, steel crown/aluminum skirt two-piece pistons. After years of development and testing, IPD has introduced the **IPDSteel®** articulated cast steel pistons for applications such as the Caterpillar® 3400 & C15 series.

Our patent pending design and processes include:

- ◆ High quality casting techniques for product integrity
- ◆ High strength 4130 alloy steel
- ◆ Heat treatment for strength
- ◆ Latest in equipment & machining techniques
- ◆ Quality control features that include:
  - X-ray to ensure the quality of what you can not see
  - Testing of bushing retention
  - Dimensional quality control

All parts are covered by our aftermarket leading Technical and Warranty Support programs. Please contact your IPD Customer Service Center for exact applications.

### GROOVED CONNECTING ROD BEARINGS



In 1993, IPD developed the "**GROOVED**" connecting rod bearing for 3400B, C & eventually the E series engines. Some of these engines were known for low hour failure or costly preventative maintenance bearing roll-ins. Shown above are results in the same engine after 300,000 miles with 2 non-grooved bearings shown on left and the IPD grooved bearing shown on right.

### IPD GASKET OPTIONS

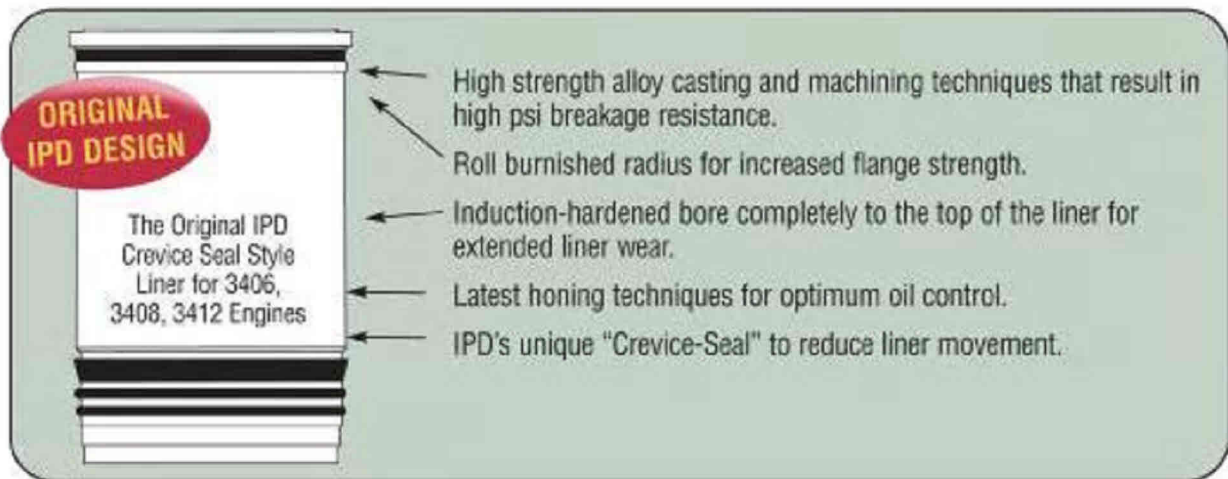
IPD offers both the "OEM Modular style" gasket sets as well as our innovative **IPD 123™** style gasket sets. These sets can reduce your time in determining what sets to use, as well as mechanic's time searching for parts. Compare our gasket and seal materials to our competitors and you will see why these sets are instant hits with quality-conscious engine technicians.



## IPD CREVICE SEAL CYLINDER LINER

Approximately 7 liner and o-ring changes for 3400 series Caterpillar® engines between 1982 and 1998 led IPD and our customers to work on ways to extend the life of the bottom o-rings on these engines. Our suspicion was that the o-ring failures in most cases were due to excessive liner movement. Thus the IPD "Crevice-Seal" style cylinder liner was

developed to help reduce that movement by utilizing the tapered crevice seal. This has been sold successfully by IPD for over a decade. Don't be fooled by imitations! Only the IPD "CS" liner offers all the features mentioned below and is backed by our comprehensive IPD warranty. Please see our written warranty at [www.ipdparts.com](http://www.ipdparts.com)



## IPD PACKAGING

Even our packaging is innovative. For example, IPD cylinder liners are put through an ultra-sonic cleaning system before packaging to assure the best possible cleanliness before you receive them. We also bag the liner, cover the top and bottom of each liner with an IPD plastic cap to keep the dirt out and protect liner surfaces. Each liner is then packed in a high grade box.

IPD valves are packaged in the most popular engine configurations, separated by cardboard dividers to eliminate nicks and scrapes, and then packaged in top-opening boxes and shrink-wrapped for added protection.

Our engine bearings are typically shrink-wrapped with plastic dividers to eliminate bearing to bearing contact and packed into high grade boxes.

IPD 123™ style gasket sets are sub-packaged in plastic bags and separated by major engine sections (front, top, rear etc) then placed into top-opening boxes and shrink-wrapped for added protection and increased shelf life.



## IPD VALVE TRAIN PRODUCTS OFFER THE HIGHEST QUALITY STANDARDS FOR DIESEL AND NATURAL GAS APPLICATIONS

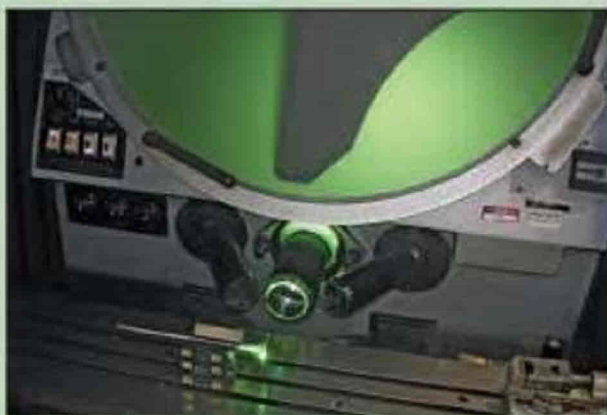
IPD valve train products offer cost savings without risk to cylinder head life expectancy. Our valves are engineered from the materials specifically developed for diesel or natural gas applications, not automotive grade materials as

many aftermarket companies offer in lower priced products. Valve guides, seats, keepers and springs all receive the same attention to detail in specifications and metallurgy.

Listed below are typical specification areas that we address in order to achieve the highest quality standards for IPD valve train products:

- ◆ Exhaust valves made of 23-8N materials, not automotive or light duty materials
- ◆ Valve seats utilizing purpose built materials specific to applications such as natural gas, diesel or methane

- ◆ Valve guides with uniform dimensions, knurling and tight tolerances for maximum valve cooling and oil control
- ◆ Valve springs of the highest quality steel with correct tensions and shot-penned for strength and long service life



IPD valve inspected on our optical comparator.



Typical parts coverage for a 3406E engine.

## IN & OUT OF FRAME ENGINE OVERHAUL KITS FROM IPD FOR POPULAR ON-HIGHWAY 3406A,B,C,E & C15 APPLICATIONS

We offer cost saving kits for popular applications with our in and out-of-frame overhaul kits. These kits will typically contain:

- ◆ Pistons, pins and retainers (aluminum, gallery-cooled aluminum, two-piece articulated)
- ◆ Cylinder liners, o-rings and seals with optional IPD "crevice seal" style liner
- ◆ Rings made of the latest material, coatings and quality assured for size, tension and finish
- ◆ Rod & main bearings with optional IPD *grooved* connecting rod bearing
- ◆ IPDStyle 1-2-3 gasket sets for simplifying your ordering and assembly

Only IPD offers engine overhaul kits with the unique patent pending **IPDSteel**<sup>®</sup> two-piece cast series of articulated pistons.

Options available by visiting our on-line **IPDNet**<sup>™</sup> or by contacting your IPD Customer Service Center for details.

## WHAT PISTON IS IN YOUR ENGINE?

In some cases, pistons may have been upgraded or changed from what was originally installed at the factory. To help determine what piston you have in your Caterpillar® 3406, 3408, 3412 or the later "C-liter" series 5.4" (137.16mm) bore engines, we have put together the following pictures, descriptions, and assigned our own "type" number designations to help you identify them. As always, refer to the engine serial and arrangement numbers, and consult the OEM part reference or contact your IPD Customer Service Center for exact applications.



**TYPE 1**

One-piece aluminum piston.  
IPD offers coverage for most applications.

Generally fits A, B and early C engines.



**TYPE 2**

One-piece aluminum piston with crown gallery cooling.  
IPD offers coverage for most applications.

Generally fits C & some early E engines.



**TYPE 3**

Two-piece articulated piston with steel crown and aluminum skirt.  
This version has open crown gallery.  
IPD offers the **IPDSteel®** cast steel series for most popular applications.

Generally fits late C & early E & C15 engines.



**TYPE 4**

Two-piece articulated piston with steel crown and aluminum skirt.  
This version has closed crown gallery.  
IPD offers the **IPDSteel®** cast steel series for most popular applications.

Generally fits later E & C15 engines.



**TYPE 5**

One-piece steel piston.  
IPD will offer the UniSteel™ cast steel series soon.

Generally fits latest E & C15 engines as well as late 3408 / 3412 configuration "HEUI" applications.



## IPD ENGINE MODEL SUMMARY

### CATERPILLAR®

D3508 / D3512 / D3516 / D3524

G3508 / G3512 / G3516 / G3520

D3406 / D3408 / D3412

D3406E / D3408E / D3412E

G3406 / G3408 / G3412

D3304 / D3306 / D333

G3304 / G3306 / G333

3204 / 3208

3114 / 3116 / 3126 / 3176C / 3196

3064 / 3066

D379 / D398 / D399

G379 / G398 / G399

D353 / G353

D339 / D342 / G342

D343 / D346 / D348

C7, C9, C10, C12, C15 / C15 Acert

### CUMMINS®

ISX15/QSX15

### DETROIT DIESEL®

60 Series

### WAUKESHA®

7042 / 7044