

G3500

Cat® Engines for Gas Applications



CATERPILLAR®

G3500 ENGINES

THE POWER IS IN YOUR HANDS

Put a Cat® G3500 engine on the job, and you'll put the entire operation on a whole new level. These versatile medium speed gas engines don't take long to demonstrate why they're the best selling in their class — and how they live up to the Caterpillar name.

Their renowned performance and reliability are matched by their incredible efficiency.

The G3516 engine is a spark-ignited, low emissions (lean-burn) design that features the ADEM™ A3 system. This system provides integrated ignition, speed governing, protection and control, as well as detonation-sensitive variable ignition timing. An integrated air/fuel ratio control is available on specified models.

AT THE CORE OF YOUR OPERATION AND THE FOREFRONT OF TECHNOLOGY



INTELLIGENT ELECTRONICS

The advanced ADEM A3 electronic control system lets your G3500 engine work smarter and harder. Its microprocessor, which is six times faster than its predecessor, actually thinks for the engine and responds accordingly. From governing, to air-fuel ratio control, to ignition timing and detonation control, the ADEM A3 platform integrates and streamlines precise engine management, providing:

- An electronic display, replacing a mechanical gauge
- Tighter control over key parameters for cleaner, more efficient operation
- Simplified diagnostics and troubleshooting
- Expanded monitoring capabilities for greater engine protection
- Compatibility with several optional display systems

PROVEN IRON

The G3500 family is engineered using the renowned Cat diesel frame, with over 60 years of industry-leading innovation built in.

- Deep-cut gallery-cooled aluminum pistons
- Low pressure gas capability
- High-energy ignition system
- Full-length water-cooled liners
- Steel-backed aluminum bearings with lead-tin overlay
- Deep-hardened regrindable crankshafts
- Forged steel connecting rods
- TPD turbo
- Over 41,000 gas engines shipped

ADVISOR PANEL (OPTIONAL)

The remote-mounted Advisor Panel provides control system inputs for engine operation. Its four-inch LCD screen displays all major engine-operating parameters, including control system diagnostic and event codes.

- Colored lights indicate engine running, alarm, and shutdown conditions as well as pre-lube status
- Provides for remote speed control
- Display units are user selectable for English or metric
- Displays real time operating information such as fuel consumption and engine speed



PL1000 COMMUNICATION MODULES (OPTIONAL)

This communications management device provides an interface between the engine ECU and remote computer or other RS-232, RS-485, or J1939 device.

- Allows engine operational and diagnostic parameters to be monitored and displayed
- Can be configured for extension of J1939 connection and Cat Data Link®
- Provides the capability to remotely start or stop engine

MAINTENANCE AND SERVICE

- Spark plug replacement life
- Service interval hours/downtime (top end overhaul frequency)



1 CYLINDER HEAD

- 20 degree inlet valves to provide longer wear and less recession.
- 45 degree exhaust valve provides wider seating surface, increases heat transfer and reduces contact stress. The new valves also reduce combustion product buildup on seating surfaces.
- Pre-machined insert and guide improve concentricity of valve and seat and improve and simplify the rebuild process.
- Proper machining of water outlet holes assures adequate cooling and easy installation.
- Rigid cleaning process ensures internal water passages are free of core sand and metal shavings ensuring proper cooling and a longer lasting cylinder head.

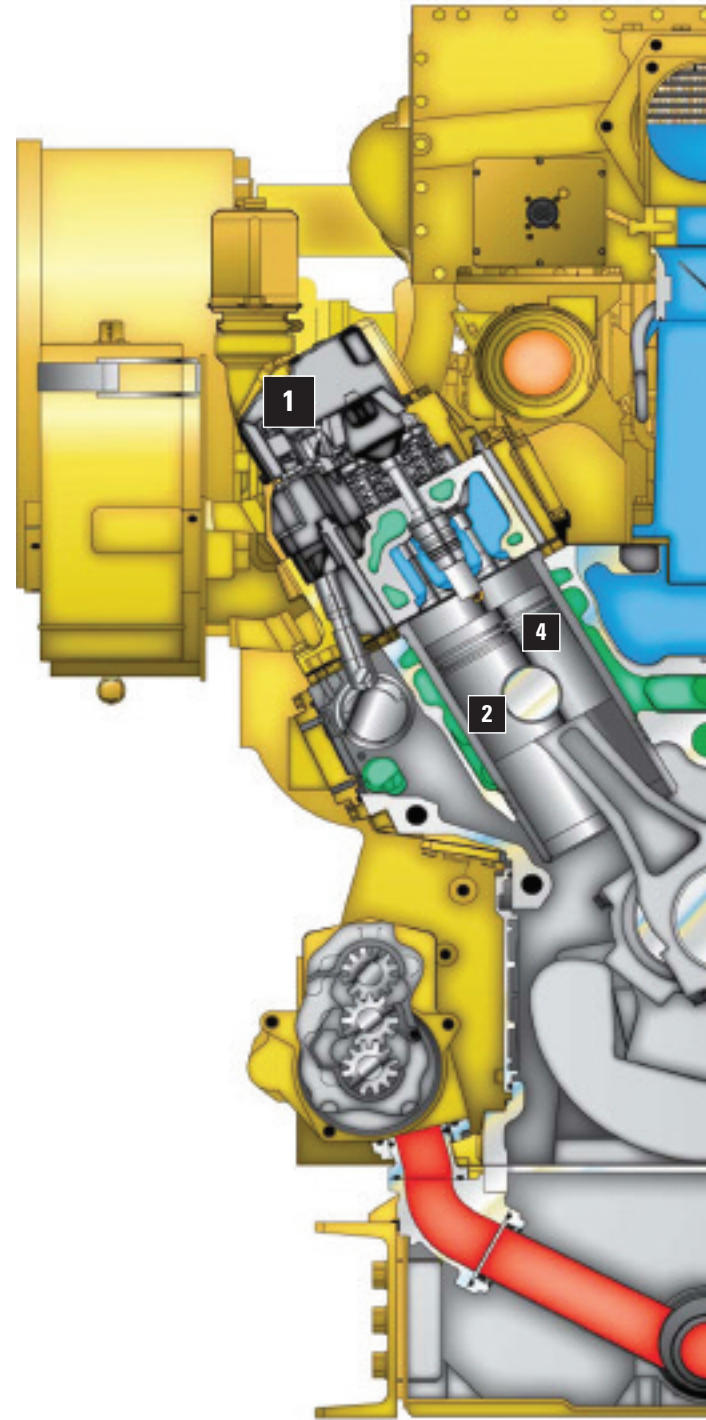
2 CYLINDER LINERS

- Heat-treated over their full length for strength
- Roll-burnished for extra strength in the critical flange area where stresses from combustion are concentrated
- Uniform cross-hatch honing pattern that ensures correct distribution of oil over the liner surface for proper ring seating and lubrication
- Made with high-grade gray iron for exceptional strength and durability
- Caterpillar demands exact tolerances be met to ensure consistently round bores for proper ring seat and a precise fit in block bores
- Liners are pre-honed to preserve life and disperse oil better beginning with hour one
- Caterpillar flanges are roll-burnished in the radius to increase strength and eliminate cracking
- Caterpillar controls flange head thickness to guarantee a precise match to the block
- O-ring seal grooves are chamfered

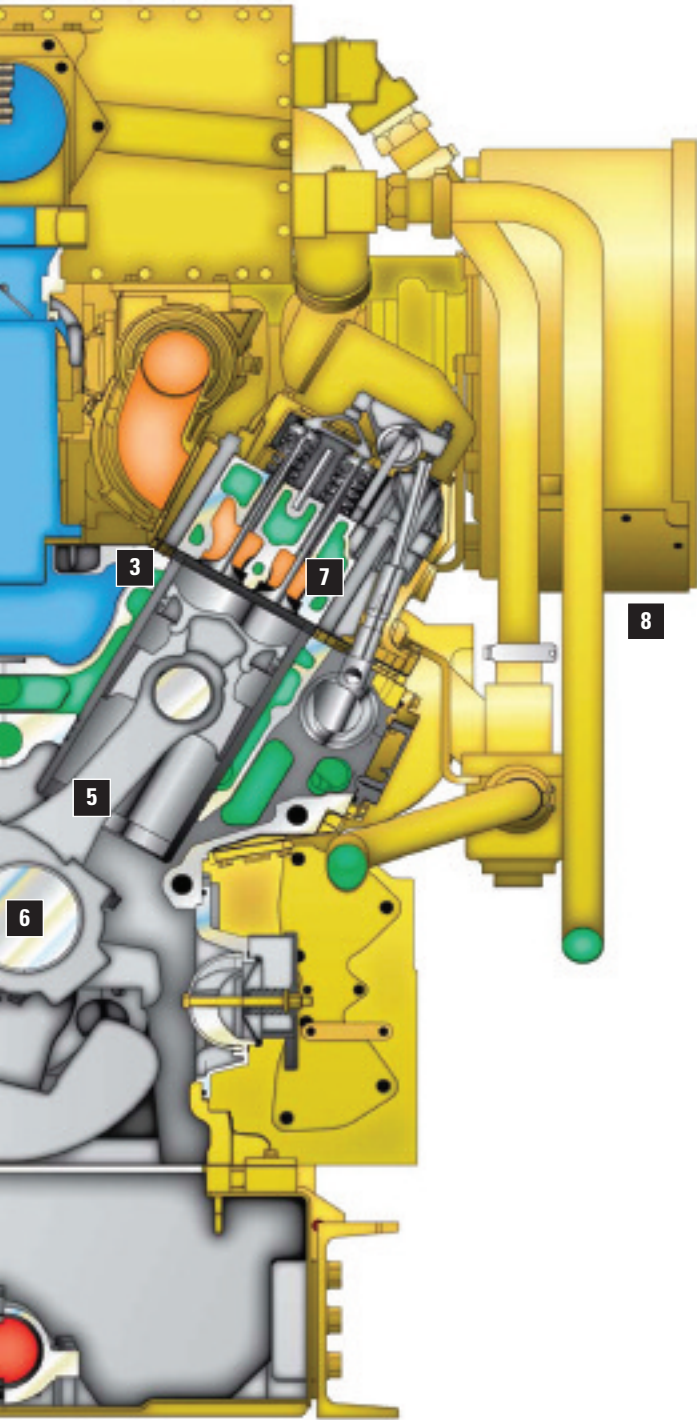
3 HEAD GASKETS

- Perforated metal core allows greater heat transfer and superior bonding of the core and facing material
- Durable fire ring results from stainless steel material
- Gaskets use graphite facing material which significantly improves sealing capability
- Greater seating performance

G3500 GAS



S ENGINES



4 PISTONS AND RINGS

- Pistons are profiled, tapered from bottom to top and expanded to fit the bores perfectly at operating temperature
- Constructed from silicon alloy aluminum which contributes to long life; pistons can be reused, resulting in savings to the customer as well as added reliability to the engine
- Cast-in nickel-iron ring band helps ensure extended wear life
- Caterpillar dealers have “reusability guidelines” and will be happy to inspect the customer’s pistons and other components to determine their reusability
- Pistons are ultrasonically inspected to ensure integrity between the ring carrier and piston bond

5 CONNECTING ROD

- Tapered shape of the pin bore gives the connecting rod and the piston more strength in the areas with the most load

6 CRANKSHAFT

- Journals on Caterpillar crankshafts are hardened above RC 40 and polished to a 5 microinch surface finish to the highest industry standards
- Bearings have consistent wall thickness and a precise crush height to ensure proper clearance and oil flow
- Crankshaft hardening process results in tough shock absorption
- Greater surface hardened depth allows crankshaft reusability
- Better surface finish for longer bearing life
- Precise journal grinding assures exact bearing fit

7 VALVES

- Up to 1-1/2 times more facing material than industry standard on the critical face area
- Thicker facing material enhances the ability to reuse the valves

8 WIRING HARNESS

- Protection of cable
- Insulated against vibration

ENGINE SYSTEMS

- Cooling systems
 - Separate circuit aftercooler
 - Provides the means for the aftercooler to cool the compressed air leaving from the turbocharger upon intake
 - The thermostat continually opens and closes as the coolant temperature changes
 - Turbochargers and aftercoolers circulate partial flow of coolant from the water pumps directly to the aftercooler. Coolant is used to lower the air temperature so that more air can be packed into the cylinder. This allows more fuel to be burned and creates higher engine horsepower output
- Protection system
 - Explosion relief valves — open at 1.6 psi (11 kPa) per valve
 - Alarms and shutdowns
- Lubrication System (optional)
 - Oil pan/sump capacity
 - Oil cooler
 - Oil pump

DEPENDABLE RATED POWER

- With a power range of 384 to 1286 kW (515 to 1725 bhp), the G3500 engine family offers the versatility to meet your application needs
- G3500 electronics assure longer overhaul intervals and reduced maintenance
- Extended reliability

U.S. EPA SI STATIONARY NSPS REGULATIONS

Effective July 2007, the U.S. EPA will enforce the new Spark Ignited New Source Performance Standard (SI NSPS) for stationary engines rated equal to or above 500 bhp. Effective January 1, 2008, this standard will be required for engines rated below 500 bhp.

All Caterpillar G3500 engines meet or exceed the U.S. EPA NSPS regulations.

FUEL FILTER

- Remote-mounted gas filter for use before inlet filters to one micron particle size with maximum 2 psi

FACTORY AVAILABLE ACCESSORIES

- 3-way catalyst
- Oxidation catalyst
- SCR
- Exhaust after-treatment
- Exhaust emissions analyzer
- Cat® Electronic Technician (ET) diagnostic software to monitor engine performance





G3508



G3512



G3516



G3520B

G3500 ENGINES — CONTINUOUS

| | 1400 rpm | | 1200 rpm | |
|----------|----------|-----|----------|-----|
| | bkW | bhp | bkW | bhp |
| G3508 TA | 472 | 630 | 384 | 515 |
| G3508 NA | — | — | 391 | 524 |
| G3508 TA | 500 | 670 | 407 | 545 |

| | 1400 rpm | | 1200 rpm | |
|----------|----------|------|----------|------|
| | bkW | bhp | bkW | bhp |
| G3516 NA | — | — | 492 | 660 |
| G3516 TA | — | — | 783 | 1050 |
| G3516 TA | 1000 | 1340 | 858 | 1150 |

| | | | | |
|----------|-----|------|-----|-----|
| G3512 TA | — | — | 589 | 790 |
| G3512 TA | 749 | 1005 | 642 | 860 |

| | | | | |
|-----------|------|------|------|------|
| G3520B TA | 1286 | 1725 | 1104 | 1480 |
|-----------|------|------|------|------|

NA = Naturally Aspirated

TA = Turbocharged/Aftercooled



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The performance we promise is the performance you get. That's because our product support is just as strong as our product line. More than 2,200 Caterpillar dealer outlets stand ready to fulfill your

every need — on every continent, every day. We understand that the work can't wait, so neither will you. Don't just invest in power, invest in a powerful solution — Caterpillar gas engines.

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