

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-32

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

CATERPILLAR, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 of the Health and Safety Code; and,

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following Caterpillar, Inc. 1997 model-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Industrial Equipment

Fuel Type: Diesel

| <u>Engine Family</u> | <u>Liters (Cubic Inches)</u> | <u>Exhaust Emission Control Systems and Special Features</u> |
|----------------------|------------------------------|--|
| VCP10.RZDARB | 10.4 (636) | Turbocharger Smoke Puff Limiter Charge Air Cooler |

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matters (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

| <u>Exhaust Emissions (g/bhp-hp)</u> | | | | <u>Smoke Opacity (%)</u> | | |
|-------------------------------------|-----------|------------|-----------|--------------------------|------------|-------------|
| <u>THC</u> | <u>CO</u> | <u>NOx</u> | <u>PM</u> | <u>Accel</u> | <u>Lug</u> | <u>Peak</u> |
| 1.0 | 8.5 | 6.9 | 0.4 | 20 | 15 | 50 |

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

| <u>Engine Family</u> | <u>Exhaust Emissions (g/bhp-hr)</u> | | | | <u>Smoke Opacity (%)</u> | | |
|----------------------|-------------------------------------|-----------|------------|-----------|--------------------------|------------|-------------|
| | <u>THC</u> | <u>CO</u> | <u>NOx</u> | <u>PM</u> | <u>Accel</u> | <u>Lug</u> | <u>Peak</u> |
| VCP10.RZDARB | 0.5 | 1.0 | 6.7 | 0.3 | 16 | 9 | 20 |

**1997 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY OFF-ROAD DIESEL ENGINES**

Manufacturer Caterpillar Inc. Engine Family VCP10.RZDARB
 Displacement 10.4 / 636 Liters/Cubic Inches Engine Configuration: V8
 All Codes in Eng. Family: CA 49S 50S XX Cert Test Procedures: ARB EPA XX
 Valves/Ports per Cylinder 2 valves/cyl. Strokes per Combustion Cycle: 4
 Maximum Rated Power: 300 HP (224 KW) @ 2600 RPM
 Ignition: Compression XX Compression with Glow Plug _____ Spark _____
 Fuel Type (s): Dedicated _____ Flex-Fuel _____ Dual-Fuel _____ Diesel XX M100 _____ M85 _____
 CNG _____ LNG _____ LPG _____ Other (specify) _____
 Diesel Cert Fuel: 40 CFR 86.1313-94 XX Other (specify) _____
 Primary Service Equipment: Industrial
 Exhaust ECS (e.g., MFI, TC, CAC): EM, TC, SPL, DI, CAC

(Use abbreviations per SAE J1930 JUN93)

| Engine Model (Eng. Code) | Rated HP @ RPM | Fuel Rate @ Rated HP mm ³ /stroke (lbs/hr) | Fuel Pump & Injector Part No. | ECM/PCM Part No. | EGR Valve Part No. | PTOX / Catalytic Converter Part No. |
|-----------------------------|-------------------|--|-------------------------------------|---------------------|--------------------------|--|
| 3208 (1) | MAX 300 @ 2600 | 102 (119.5) | 1443520/1333896 | ---- | ---- | ---- |
| 3208 (2) | 275 @ 2600 | 93 (108.8) | 1443520/1333896 | ---- | ---- | ---- |
| 3208 (3) | 271 @ 2500 | 93 (103.9) | 1443520/1333896 | ---- | ---- | ---- |
| 3208 (4) | 300 @ 2400 | 105 (113.0) | 1443520/1333896 | ---- | ---- | ---- |
| 3208 (5) | 250 @ 2400 | 86 (93.1) | 1443520/1333896 | ---- | ---- | ---- |
| 3208 (6) | 245 @ 2400 | 85 (91.4) | 1443520/1333896 | ---- | ---- | ---- |
| 3208 (7) | 235 @ 2400 | 81 (87.6) | 1443520/1333896 | ---- | ---- | ---- |
| 3208 (8) | 230 @ 2400 | 80 (85.7) | 1443520/1333896 | ---- | ---- | ---- |
| 3208 (9) | MIN 225 @ 2400 | 78 (84.0) | 1443520/1333896 | ---- | ---- | ---- |
| 3208 (10) | 231 @ 2350 | 81 (85.1) | 1443520/1333896 | ---- | ---- | ---- |

| | | | | | | | | |
|---------------|---------|--|--|--|--|--|--|--|
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