State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-3-16
Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

VOLVO CONSTRUCTION EQUIPMENT COMPONENTS AB

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

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

IT IS ORDERED AND RESOLVED: That the following diesel engines and exhaust emission control systems produced by the manufacturer are certified as described below for use in heavy-duty off-road equipment:

Model Year: 2000

Typical Equipment Usage: Loaders

Engine Power Ratings Range: 175 – 750 horsepower, inclusive

Fuel Type: Diesel

| Engine Family | Displacement Liters | Displacement Cubic Inches | Exhaust Emission Control Systems and Special Features |
|---|---|---|---|
| YVSXL16.0CE1 (TD164KAE) | 16.1 | 982 | Turbocharger<br>Charge Air Cooler<br>Smoke Puff Limiter |

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

| | Exhaust Emissions (g/hp-h) | | | | Smoke Opacity (%) | | |
|---|---|---|---|---|---|---|---|
| | THC | CO | NOx | PM | Accel | Lug | Peak |
| Standard | 1.0 | 8.5 | 6.9 | 0.4 | 20 | 15 | 50 |
| Certification | 0.2 | 0.3 | 6.1 | 0.1 | 2 | 1 | 7 |

BE IT FURTHER RESOLVED: That the listed engine models comply with "Exhaust Emission Standards and Test Procedures -- Heavy-Duty Off-Road Diesel-Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model-year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with "Emission Control Labels --1996 and Later Heavy-Duty Off-Road Diesel-Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model-year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Sections 2425 *et seq.*).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 20th day of January 2000.

R. B. Summerfield, Chief
Mobile Source Operations Division

# Engine Model Summary Form

U-R- 3-16.

Manufacturer: **Volvo Construction Equipment Components**

Engine category: **Nonroad CI**

EPA Engine Family: **YVSXL16.0CE1**

Mfr Family Name: **TD164KAE**

Process Code: **New Submission**

| 1.Engine Code | 2.Engine Model | 3.BHP@RPM (SAE Gross) | 4.Fuel Rate: mm/stroke @ peak HP (for diesel only) | 5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only) | 6.Torque @ RPM (SEA Gross) | 7.Fuel Rate: mm/stroke@peak torque | 8.Fuel Rate: (lbs/hr)@peak torque | 9.Emission Control Device Per SAE J1930 |
|---|---|---|---|---|---|---|---|---|
| I | TD164KAE | 496 @ 1800 | 298 | 175 | 1807 @ 1000 | 341 | 111 | EM, SPL, TC, C |