

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-2-16

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

CUMMINS ENGINE COMPANY, 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 Cummins Engine Company 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: Agriculture Tractor, Mining/Construction Trucks, Snow Groomer, Logging Equipment

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
VCE359R6DTRB (A403)	5.9 (359)	Turbocharger 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-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>
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 Emission (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>
VCE359R6DTRB (A403)	0.3	0.6	5.1	0.1	6	1	22

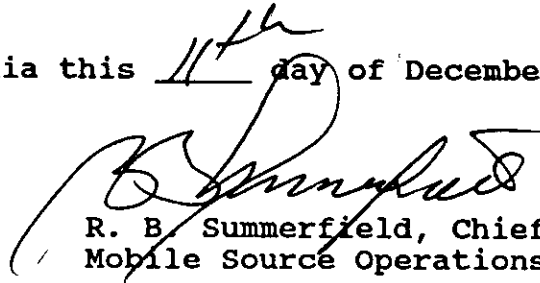
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "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, Section 2425 et seq.).

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

Executed at El Monte, California this 11th day of December 1996.


R. B. Summerfield, Chief
Mobile Source Operations Division

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

Manufacturer Cummins Engine Company, Inc. Engine Family (A403) VCE359R6DTRB
 Displacement: 359 / 5.9 Liters/Cubic Inches Eng Config: I-6
 All Codes in Eng Fam: CA 49S 50S Cert Test Procedures: ARB EPA
 Valves/Ports per Cylinder 2 Strokes per Combustion Cycle 4
 Maximum Rated Power: 200 HP (149 KW) @ 2500 RPM
 Ignition: Compression Compression with Glow Plug Spark
 Fuel Type(s): Dedicated Flex-Fuel Dual Fuel Diesel M100 M85
 CNG LNG LPG Other (specify) _____
 Diesel Cert Fuel: 40 CFR 89.330-96 X Other (specify) _____
 Primary Service Equipment: Ag Tractors, Construction/Mining Trucks, Snow Groomers, and Logging Equipment
 Exhaust ECS (e.g., MFI, TC, CAC): TC, 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.
<u>1889</u> B5.9-C	200 @ 2500 185 @ 2500	91(77.1) 85(71.9)	IN 3930131 FP 3927359 FP 3927357	N/A	N/A	N/A
<u>2063</u> B5.9-C	185 @ 2300 185 @ 2200 174 @ 2200	92(71.5) 93(69.0) 88(65.1)	IN 3930131 FP 3283019 FP 3927356 FP 3929602	N/A	N/A	N/A
<u>2072</u> B5.9-C	174 @ 2500	79(65.8)	IN 3929490 FP 3929601	N/A	N/A	N/A
<u>1961</u> B5.9-C	174 @ 2500	79(65.8)	IN3929490 FP3929595	N/A	N/A	N/A
<u>1962</u> B5.9-C	170 @ 2300 169 @ 2100 167 @ 2000 166 @ 2100 165 @ 2200 160 @ 2000 150 @ 2200 147 @ 2000	84(65.0) 89(63.1) 90(60.7) 84(59.4) 82(60.4) 86(57.9) 75(55.8) 79(53.2)	IN 3929490 fp 3928596 FP 3930164 FP 3930163 FP 3928598 FP 3928597 FP 3930162 FP 3928599 FP 3930161	N/A	N/A	N/A
Date Issued:						
visions:						