

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-2-34

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. 1999 model-year engines with rated power between 175 and 750 horsepower and exhaust emission control systems are certified as described below in heavy-duty off-road equipment:

Typical Equipment Usage: Crane, Loader, Tractor, Dozer, Pump, Compressor, and Generator Set

Fuel Type: Diesel

<u>Engine Family</u>	<u>Displacement</u>		<u>Exhaust Emission Control Systems and Special Features</u>
	<u>Liters</u>	<u>Cubic Inches</u>	
XCEXL0359ABA (A403)	5.9	359	Charge Air Cooler Turbocharger

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 matter (PM) certification exhaust emission standards in grams per brake horsepower-hour (g/hp-h), and the opacity-of-smoke emission standards in percent (%) during acceleration (Acce1), lugging (Lug), and peak (Peak) modes for this engine family are as follows (Title 13, California Code of Regulations, Section 2423):

<u>Exhaust Emissions (g/hp-h)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Acce1</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 emissions certification values in grams per brake horsepower-hour, and the opacity-of-smoke emissions certification values in percent for this engine family are:

<u>Exhaust Emissions (g/hp-h)</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>
0.3	0.6	6.5	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, Sections 2425 et seq.).

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

Executed at El Monte, California this 16th day of November 1998.


 R. B. Summerfield, Chief
 Mobile Source Operations Division

LARGE ENGINE MOD L SUMMARY

12/5/96

Manufacturer: **Cummins Engine Company**

Process Code: **New Submission**

EPA Engine Family: **XCEXL0359ABA**

Manufacturer Family Name: **A403**

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mmv/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mmv/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
CPL 1889								
FR 90001	B5.9-C	200@2500	91	77.1	593@1500	112	56.8	TC CAC
FR90548	B5.9-C	200@2500	91	77.1	593@1500	112	56.8	TC CAC
FR 9898	B5.9-C	185@2500	85	71.9	550@1500	104	52.5	TC CAC
FR 90269	B5.9-C	185@2400	91	73.4	545@1500	109	55.0	TC CAC
CPL 2063								
FR 90340	B5.9-C	185@2400	90	72.6	558@1500	109	55.0	TC CAC
FR 90167	B5.9-C	185@2300	92	71.5	580@1500	111	56.3	TC CAC
FR 9897	B5.9-C	185@2200	93	69.0	580@1500	111	56.3	TC CAC
FR 90539	B5.9-C	185@2200	93	69.0	580@1500	111	56.3	TC CAC
FR 90287	B5.9-C	185@2200	93	69.0	580@1500	110	55.6	TC CAC
FR 90549	B5.9-C	185@2100	96	67.7	567@1500	110	55.8	TC CAC
FR 90081	B5.9-C	174@2200	88	65.1	590@1500	112	56.8	TC CAC
CPL 2479								
FR90378	B5.9-C	174@2200	87	64.7	590@1500	112	56.8	TC CAC
FR90504	B5.9-C	174@2200	87	64.7	590@1500	112	56.8	TC CAC
CPL 2072								
FR 90080	B5.9-C	174@2500	78	65.8	458@1500	88	43.7	TC CAC
CPL 1961								
FR 90016	B5.9-C	174@2500	78	65.8	458@1500	88	44.3	TC CAC
CPL 2417								
FR 90375	B5.9-C	174@2500	80	67.1	480@1500	91	46.0	TC CAC
CPL 1962								
FR 90017	B5.9-C	170@2300	84	65.0	490@1500	95	48.0	TC CAC
FR 90313	B5.9-C	170@2200	85	63.0	476@1500	90	45.7	TC CAC
FR 90338	B5.9-C	168@2200	84	62.0	541@1500	101	51.0	TC CAC
FR 90019	B5.9-C	166@2100	84	59.4	463@1500	89	45.0	TC CAC
FR 90018	B5.9-C	165@2200	81	60.4	512@1500	97	48.9	TC CAC
FR 90337	B5.9-C	153@2200	74	55.0	493@1500	96	48.5	TC CAC
FR 90020	B5.9-C	150@2200	75	55.8	466@1500	89	45.1	TC CAC
CPL 2292								
FR 90143	B5.9-C	169@2100	89	63.1	476@1500	94	47.4	TC CAC

E-C
V-E-2-34

XCEL 0359 ABA

A403

		hp @ rpm	mm ³ / stroke	W/h fuel	Torque ft-lb @ rpm	mm ³ / stroke	W/h fuel	TC	CAC
FR 90142	B5.9-C	167@2000	90	60.7	480@1500	94	47.7		
FR 90321	B5.9-C	160@1900	87	55.8	479@1500	93	47.0	TC	CAC
CPL 2147 FR 90444	B5.9-C	171@2200	84	62.4	469@1400	99	43.8	TC	CAC
CPL 2373									
FR 90356	6BTA5.9-G1	177@1800	104	63.0				TC	CAC
FR 90357	6BTA5.9-G1	156@1500	106	53.7				TC	CAC

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