

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-2-30

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. 1998 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: Crane, Tractor, Dozer, Pump, and Generator Set

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
WCEXL0359ABA (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>
WCEXL0359ABA (A403)	0.3	0.6	5.1	0.1	6	1	22

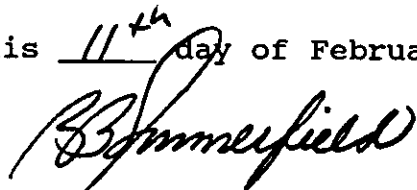
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

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 11<sup>th</sup> day of February 1998.



R. B. Summerfield, Chief  
Mobile Source Operations Division

# LARGE ENGINE MODEL SUMMARY

12/15/96

Manufacturer: **Cummins Engine Company**

Process Code: **New Submission**

EPA Engine Family: **WCXLO359ABA**

Manufacturer Family Name: **A403**

1. Engine Code	2. Engine Model	3. BHP@RPM (SAE Gross)	4. Fuel Rate: mm <sup>3</sup> /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 <sup>3</sup> /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, CAE
FR 9898	B5.9-C	185@2500	85	71.9	550@1500	104	52.5	TC, CAE
FR 90288	B5.9-C	185@2500	85	71.6	550@1500	106	53.4	TC, CAE
FR 90269	B5.9-C	185@2400	91	73.4	545@1500	109	55.0	TC, CAE
CPL 2063								
FR 90340	B5.9-C	185@2400	90	72.6	558@1500	109	55.0	TC, CAE
FR 90167	B5.9-C	185@2300	92	71.5	580@1500	111	56.3	TC, CAE
FR 9897	B5.9-C	185@2200	93	69.0	580@1500	111	56.3	TC, CAE
FR 90287	B5.9-C	185@2200	93	69.0	580@1500	110	55.6	TC, CAE
FR 90081	B5.9-C	174@2200	88	65.1	590@1500	112	56.8	TC, CAE
CPL 2072								
FR 90080	B5.9-C	174@2500	78	65.8	458@1500	88	43.7	TC, CAE
CPL 1961								
FR 90016	B5.9-C	174@2500	78	65.8	458@1500	88	44.3	TC, CAE
CPL 2417								
FR 90375	B5.9-C	174@2500	80	67.1	480@1500	91	46.0	TC, CAE
CPL 1962								
FR 90017	B5.9-C	170@2300	84	65.0	490@1500	95	48.0	TC, CAE
FR 90313	B5.9-C	170@2200	85	63.0	476@1500	90	45.7	TC, CAE
FR 90338	B5.9-C	168@2200	84	62.0	541@1500	101	51.0	TC, CAE
FR 90019	B5.9-C	166@2100	84	59.4	463@1500	89	45.0	TC, CAE
FR 90018	B5.9-C	165@2200	81	60.4	512@1500	97	48.9	TC, CAE
FR 90337	B5.9-C	153@2200	74	55.0	493@1500	96	48.5	TC, CAE
FR 90020	B5.9-C	150@2200	75	55.8	466@1500	89	45.1	TC, CAE
CPL 2292								
FR 90143	B5.9-C	169@2100	89	63.1	476@1500	94	47.4	TC, CAE

TC, CAC  
TC, CAC  
TC, CAC  
TC, CAC  
TC, CAC

47.7  
46.4  
47.0  
44.8  
42.2

94  
92  
93  
89  
83

480@1500  
445@1500  
479@1500  
439@1500  
414@1500

60.7  
54.3  
53.2

90  
86  
87  
81  
79

167@2000  
160@2000  
160@1900  
147@2000  
147@2000

B5.9-C  
B5.9-C  
B5.9-C  
B5.9-C  
B5.9-C

FR 90142  
FR 901  
FR 90321  
FR 90323  
FR 90140