

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-2-46  
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 Co., 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, Dozer, Pump, Compressor, 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>	
XCEXL019.AAB (B193)	19.0	1160	Charge Air Cooler Turbocharger Electronic Control Module

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 (Accel), 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>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 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>Acce1</u>	<u>Lug</u>	<u>Peak</u>
0.4	1.5	5.8	0.2	15	6	25

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 30<sup>th</sup> day of December 1998.

*Raphael Saonowitz*  
for R. B. Summerfield, Chief  
Mobile Source Operations Division

# LARGE ENGINE MODEL SUMMARY

11/19/98

Manufacturer: **Cummins Engine Company**

Process Code: **New Submission**

EPA Engine Family: **XCEXL019.AAB**

Manufacturer Family Name: **B193**

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
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CPL 2009								
FR 4203	QSK19-C	750@2100	370	262	2275@1300	433	190	CAL TC, ECM
FR 4255	QSK19-C	700@2000	363	245	2275@1300	433	190	CAL TC, ECM
FR 4191	QSK19-C	700@2100	349	247	2275@1300	433	190	CAL TC, ECM
FR 4270	QSK19-C	700@2100	349	247	2185@1200	433	175	CAL TC, ECM
FR 4233	QSK19-C	700@1800	406	246	2275@1400	423	200	CAL TC, ECM
FR 4238	QSK19-C	675@2100	329	233	2275@1300	433	190	CAL TC, ECM
FR 4228	QSK19-C	650@2100	319	226	2275@1300	433	190	CAL TC, ECM
FR 4230	QSK19-C	650@2000	337	227	2275@1300	433	190	CAL TC, ECM
FR 4281	QSK19-C	650@1800	359	218	2275@1300	433	190	CAL TC, ECM
FR 4280	QSK19-C	640@1800	353	214	1950@1400	365	172	CAL TC, ECM
FR 4268	QSK19-C	635@2100	306	217	1747@1500	336	170	CAL TC, ECM
FR 4253	QSK19-C	630@1800	347	211	2275@1300	433	190	CAL TC, ECM
FR 4282	QSK19-C	600@2100	323	229	1950@1400	365	172	CAL TC, ECM
FR 4246	QSK19-C	600@1800	334	203	1950@1400	358	169	CAL TC, ECM
FR 4262	QSK19-C	550@1800	310	188	1820@1300	354	155	CAL TC, ECM
FR 4330	QSK19-c	750@2100	370	262	2202@1300	420	184	CAL TC, ECM

EO U-R-2-46