

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-2-45
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.AAA (A193)	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>Accel</u>	<u>Lug</u>	<u>Peak</u>
0.3	1.8	6.0	0.2	15	4	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 30th day of December 1998.


for R. B. Summerfield, Chief
Mobile Source Operations Division

LARGE ENGINE MODEL SUMMARY

12/11/96

Manufacturer: **Cummins Engine Company**

Process Code: **New Submission**

EPA Engine Family: **XCEXL019.AAA**

Manufacturer Family Name: **A193**

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
CPL 2008 FR 4205	QSK19-C	600@2100	297	210	1950@1300	363	159	CAL TC, ECM
FR 4237	QSK19-C	600@1800	336	204	1950@1400	364	172	CAL TC, ECM
FR 4218	QSK19-C	545@2100	271	192	1650@1500	310	157	CAL TC, ECM
FR 4235	QSK19-C	525@2100	258	183	1775@1300	328	144	CAL TC, ECM
FR 4271	QSK19-C	525@2000	283	191	1775@1300	328	144	CAL TC, ECM
FR 4250	QSK19-C	525@1800	292	177	1775@1300	328	144	CAL TC, ECM
FR 4254	QSK19-C	525@1800	292	177	1650@1500	310	157	CAL TC, ECM
FR 4261	QSK19-C	510@1800	280	170	1650@1300	327	143	CAL TC, ECM
FR 4216	QSK19-C	500@1800	277	168	1775@1300	328	144	CAL TC, ECM
FR 4236	QSK19-C	500@1800	277	168	1650@1500	310	157	CAL TC, ECM
FR 4231	QSK19-C	480@1800	273	166	1570@1350	299	136	CAL TC, ECM
FR 4284	QSK19-C	480@1800	273	166	1650@1300	327	143	CAL TC, ECM
FR 4206	QSK19-C	450@2100	230	163	1350@1500	258	113	CAL TC, ECM
FR 4227	QSK19-C	450@2000	237	160	1350@1300	258	113	CAL TC, ECM
FR 4260	QSK19-C	450@1800	252	153	1650@1300	327	143	CAL TC, ECM
FR 4257	QSK19-C	450@1800	252	153	1775@1300	328	144	CAL TC, ECM
CPL 2225								
FR 4283	QSK19-C	490@2000	261	176	1630@1400	304	143	CAL TC, ECM
FR 4258	QSK19-C	480@2000	252	170	1540@1400	286	135	CAL TC, ECM
CPL 2558								
FR 4296	QSK19-C	525@2100	258	183	1775@1300	333	146	CAL TC, ECM
FR 4303	QSK19-C	525@1800	293	178	1650@1500	310	157	CAL TC, ECM
FR 4301	QSK19-C	480@1800	273	166	1570@1350	286	130	CAL TC, ECM
FR 4304	QSK19-C	450@2000	240	162	1350@1300	267	117	CAL TC, ECM

50 U-R-2-45