

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-170  
Relating to Certification of New Off-Road Compression-Ignition Engines

CATERPILLAR, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 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 compression-ignition engine and emission control system produced by the manufacturer are certified as described below for use in off-road equipment:

Model Year: 2001

Typical Equipment Usage: Loader, Tractor and Other Industrial Equipment

Fuel Type: Diesel

	Engine		
	Displacement	Useful Life	Emission Control Systems
<u>Engine Family</u>	<u>(liters)</u>	<u>(hours)</u>	<u>and Special Features</u>
1CPXL08.8HSK	8.8	8000	Direct Diesel Injection Turbocharger Charge Air Cooler Engine 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 exhaust emission certification standards and certification values for hydrocarbons (HC), oxides of nitrogen (NOx), or non-methane hydrocarbons plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) (units are expressed in grams per kilowatt-hour (g/kw-hr)), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Section 2423):

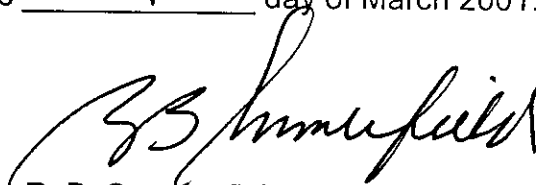
Engine Power Rating (kw)	Emission Standard Category	Standard Certification	<u>Exhaust Emissions (g/kw-hr)</u>					<u>Smoke Opacity (%)</u>		
			HC	NOx	NMHC+NOx	CO	PM	Accel	Lug	Peak
225≤KW<450	Tier 2		N/A	N/A	6.4	3.5	0.20	20	15	50
			--	--	5.3	1.2	0.15	9	1	15

BE IT FURTHER RESOLVED: That the listed engine models also comply with "Emission Control Labels— 1996 and Later Off-Road Compression-Ignition 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 and 2426).

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

Executed at El Monte, California this 27<sup>th</sup> day of March 2001.



R. B. Summerfield, Chief  
Mobile Source Operations Division

ATTACHMENT

Engine Model Summary Form

Manufacturer: CATERPILLAR INC.  
 Engine category: Nonroad Over 50 Hp  
 EPA Engine Family: YCPXL08.8HSK  
 Mfr Family Name: NA  
 Process Code: New Submission

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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
Note: Peak HP	and Peak Torque	fuel rates are	nominal values.	Due to product-	ion engine avgs.	these fuel rates	may change.	
1 - Cert Engine	C-9	345 @ 2200	164	121.1	1134 @ 1400	218	102.8	EM, DI, TC, ECM,
2	C-9	212 @ 2200	110	73.4	767 @ 1300	158	73.4	EM, DI, <del>TC</del> , ECM,
3	C-9	276 @ 1800	157	94.3	943 @ 1400	187	87.1	EM, DI, <del>TC</del> , ECM,
4	C-9	274 @ 2200	135	98.8	882 @ 1400	170	79.0	EM, DI, <del>TC</del> , ECM,
5	C-9	299 @ 2200	140	102.9	968 @ 1400	182	84.6	EM, DI, <del>TC</del> , ECM,
6	C-9	229 @ 2000	123	81.8	806 @ 1300	166	71.8	EM, DI, <del>TC</del> , ECM,
7	C-9	195 @ 2000	106	70.8	745 @ 1000	142	47.2	EM, DI, <del>TC</del> , ECM,
8	C-9	228 @ 2100	117	81.9	810 @ 1400	155	72.4	EM, DI, <del>TC</del> , ECM,
9	C-9	312 @ 2100	156	108.9	1108 @ 1400	207	96.5	EM, DI, <del>TC</del> , ECM,
10	C-9	335 @ 2200	161	118.2	1100 @ 1400	212	98.6	EM, DI, TC, ECM,
11	C-9	300 @ 2200	145	106.5	1065 @ 1400	201	93.6	EM, DI, <del>TC</del> , ECM,

CAC  
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 DDI, TC, CAC, ECM

\* Caterpillar requested all of above models certified to Tier 2 reference # 2-21-2001