



CUMMINS INC.

EXECUTIVE ORDER U-R-002-0710  
New Off-Road  
Compression-Ignition Engines

Pursuant to the authority vested in California 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-14-012;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2019	KCEXL04.5AAK	4.5	Diesel	8000
SPECIAL FEATURES & EMISSION CONTROL SYSTEMS			TYPICAL EQUIPMENT APPLICATION	
Electronic Direct Injection, Turbocharger, Charge Air Cooler, Electronic Control Module, Periodic Trap Oxidizer, Diesel Oxidation Catalyst, Selective Catalytic Reduction – Urea, Ammonia Oxidation Catalyst			Crane, Loaders, Dozer, Pump and Compressor	

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			NMHC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
75 ≤ kW < 130	Tier 4 Final	STD	0.19	0.40	N/A	5.0	0.02	N/A	N/A	N/A
		CERT	0.05	0.12	--	0.01	0.002	--	--	--

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

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

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 13<sup>th</sup> day of December 2018.

Annette Hebert, Chief

Emissions Compliance, Automotive Regulations and Science Division

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**Engine Model Summary Template**

Engine Family	1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lb/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lb/hr)@peak torque	9.Emission Control Device Per SAE J1930
CEXL04.5AAK	4936:FR95722	QSB4.5	173@2000	130	58	575@1500	163	53	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4937:FR95718	QSB4.5	173@2500	138	58	575@1500	161	54	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4937:FR95719	QSB4.5	162@2500	125	57	520@1500	141	50	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4937:FR95720	QSB4.5	130@2500	115	52	480@1500	128	44	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4938:FR95721	QSB4.5	173@2200	138	58	575@1500	161	54	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4938:FR95723	QSB4.5	165@2200	125	57	561@1200	160	43	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4938:FR95724	QSB4.5	155@2200	115	52	525@1200	141	40	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4938:FR95725	QSB4.5	133@2200	94	47	467@1200	124	34	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4938:FR95726	QSB4.5	121@2200	86	42	370@1500	99	34	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4938:FR95727	QSB4.5	173@2000	138	58	575@1500	163	54	ECM,SCR,DDI,TC, CAC,DOC,PTOX
CEXL04.5AAK	4938:FR95728	QSB4.5	165@2000	126	55	561@1200	160	43	ECM,SCR,DDI,TC, CAC,DOC,PTOX

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KCEXL04.5AAK	4038:FR05730	QSB4.5	155@2000	115	52	525@1200	141	40	ECM,SCR,DDI,TC, CAC,DOC,PTOX Amox