



CALIFORNIA
AIR RESOURCES BOARD

CATERPILLAR INC.

EXECUTIVE ORDER U-R-001-0607
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	KCPXL15.2HTF	15.2	Diesel	8000
SPECIAL FEATURES & EMISSION CONTROL SYSTEMS			TYPICAL EQUIPMENT APPLICATION	
Electronic Direct Injection, Turbocharger, Charge Air Cooler, Oxidation Catalyst, Engine Control Module, Exhaust Gas Recirculation, Periodic Trap Oxidizer, Selective Catalytic Reduction-Urea, Ammonia Oxidation Catalyst			Tractor, Excavator, Loader, Off-road Truck, Dozer, Commercial Equipment	

The engine models and codes are attached.

The following are the exhaust certification standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT) for non-methane hydrocarbon (NMHC), 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
130 ≤ kW ≤ 560	Tier 4 Final	STD	0.19	0.40	N/A	3.5	0.02	N/A	N/A	N/A
		FEL	N/A	N/A	--	N/A	0.01	N/A	N/A	N/A
		CERT	0.06	0.11	--	0.1	0.01	--	--	--

BE IT FURTHER RESOLVED: That the family emission limit(s) (FEL) is an emission level declared by the manufacturer for use in any averaging, banking and trading program and in lieu of an emission standard for certification. It serves as the applicable emission standard for determining compliance of any engine within this engine family under 13 CCR Sections 2423 and 2427.

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 11th day of December 2018.

Annette Hebert
FOR Annette Hebert, Chief

Emissions Compliance, Automotive Regulations and Science Division

ATTACHMENT 1 OF 2

Engine Model Summary Template U-R-001-0607

R/c
12/2/2019

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: (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 J193C
KCPXL15.2HTF	Cert Test 1	C15	578@2100	302	214	1955@1400	372	175	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	1	C15	485@1900	275.6	176.1	1891@1200	368.3	148.7	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	2	C15	473@2100	246.9	174.4	1600@1400	310.8	146.4	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	3	C15	473@2100	246.9	174.4	1600@1400	310.8	146.4	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	4	C15	539@2100	282.2	199.3	1820@1400	352.0	165.8	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	5	C15	578@2100	310.3	219.2	1955@1400	380.1	179.0	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	6	C15	485@1700	292.4	167.2	1698@1350	327.4	148.7	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	7	C15	314@2000	179.0	120.4	1438@1300	279.0	122.0	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	8	C15	426@1800	245.1	148.4	1568@1300	304.1	133.0	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	9	C15	409@2000	220.1	148.1	1693@1200	333.3	134.5	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	10	C15	539@2100	282.1	199.3	1820@1400	352.0	165.7	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	11	C15	314@2000	179.0	120.4	1438@1300	279.0	122.0	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	12	2506F	539@2100	282.2	199.3	1820@1400	352.0	165.8	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	13	2506F	578@2100	310.3	219.2	1955@1400	380.1	179.0	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	14	2506F	473@2100	246.9	174.4	1600@1400	310.8	146.4	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	15	2506F	473@2100	246.9	174.4	1600@1400	310.8	146.4	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	16	C15	416@2000	228.1	153.4	1752@1200	348.3	140.6	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	17	C15	378@2050	202.6	139.7	1578@1200	300.6	121.3	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	18	C15	409@2000	220.1	148.1	1693@1200	333.3	134.5	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX
KCPXL15.2HTF	19*	C15	485@1700	292.4	167.2	1698@1350	327.4	148.7	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U.AMOX

New engine code

ATTACHMENT 2 OF 2

Engine Model Summary Template

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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: (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
KCPXL15.2HTF	20 *	C15	473@2100	246.9	174.4	1600@1400	310.8	146.4	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U,AMOX
KCPXL15.2HTF	20A *	C15	473@2100	246.9	174.4	1600@1400	310.8	146.4	DFI,TC,ECM,CAC,EGR,PTOX, OC,SCR-U,AMOX

* New engine code