CALIFORNIA AIR RESOURCES BOARD	KOMATSU, LTD.	**EXECUTIVE ORDER U-R-005-0490** 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-19-095;

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)
2021	MKLXL60.0AAI	60.0	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Selective Catalyst Reduction-Urea, Electronic Direct Injection, Turbocharger, Electronic Control Module, Charge Air Cooler, Ammonia Oxidation Catalyst	Loader, Pump, Compressor, Crawler-Excavator, General Mining Equipment, General Agricultural Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD) 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
ELSE > 560 kW	Tier 4 Final	STD	0.19	3.5	N/A	3.5	0.04	N/A	N/A	N/A
		CERT	0.02	2.6	--	0.1	0.02	--	--	--

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 on this 3rd day of August 2020.

Allen Lyons, Chief
Emissions Certification and Compliance Division

Engine Model Summary Template

ATTACHMENT 1 OF 2

U-R_005-0490
06/23/20

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
MKLXL60.0AAI	4653:FR60248	SDA16V160E-3	2500@1900	498	845	7412@1700	521	793	SCR, DDI, TC, ECM, CAC, AMOX
MKLXL60.0AAI	4653:FR60225	SDA16V160E-3	1875@1800	434	659	6169@1500	428	574	SCR, DDI, TC, ECM, CAC, AMOX
MKLXL60.0AAI	4653:FR60276	SDA16V160E-3	2300@1800	477	768	6866@1600	475	680	SCR, DDI, TC, ECM, CAC, AMOX
MKLXL60.0AAI	4653:FR60275	SDA16V160E-3	2000@1800	462	702	6570@1500	454	609	SCR, DDI, TC, ECM, CAC, AMOX
MKLXL60.0AAI	4653:FR60273	SDA16V160E-3	1944@1800	407	655	6169@1500	429	575	SCR, DDI, TC, ECM, CAC, AMOX
MKLXL60.0AAI	4686:FR60446	SSDA16V160E-3	2850@1900	594	956	8726@1500	596	800	SCR, DDI, TC, ECM, CAC, AMOX
MKLXL60.0AAI	4686:FR60134	SSDA16V160E-3	2700@1900	562	905	8267@1500	566	759	SCR, DDI, TC, ECM, CAC, AMOX

Engine Model Summary Template

ATTACHMENT 2 OF 2

U-R_005-0490
06/23/20

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
MKLXL60.0AAI	4653:FR60510	SDA16V160E-3	2700@1900	574	873	7976@1700	567	863	SCR, DDI, TC, ECM, CAC, AMOX
MKLXL60.0AAI	4686:FR60508	SSDA16V160E-3	2850@1900	594	956	8726@1500	596	800	SCR, DDI, TC, ECM, CAC, AMOX