

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	MSZXL05.2RXA	5.193	Diesel	8000
SPECIAL FEATURES & EMISSION CONTROL SYSTEMS			TYPICAL EQUIPMENT APPLICATION	
Electronic Control Module, Turbocharger, Charge Air Cooler, Electronic Direct Injection, Exhaust Gas Recirculation, Diesel Oxidation Catalyst, Selective Catalyst Reduction-Urea, Ammonia Oxidation Catalyst			Excavator, Crane, Loaders	

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
75 ≤ kW < 130	Tier 4 Final	STD	0.19	0.40	N/A	5.0	0.02	N/A	N/A	N/A
		CERT	0.02	0.29	--	0.2	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 at on this 16th day of October 2020.



Allen Lyons, Chief  
Emissions Certification and Compliance Division

**ENGINE MODEL SUMMARY**

**ATTACHMENT 1 of 1 CARB EO: U-R-006 0498**

**DATE: 09/09/2020**

ENGINE FAMILY	ENGINE CODE	ENGINE MODEL	BHP@RPM (SAE Gross)	FUEL RATE: mm3/stroke @peak HP	FUEL RATE: lbs/hr @peak HP	TORQUE@RPM lbs ft	FUEL RATE: mm3/stroke @peak TORQUE	FUEL RATE: lbs/hr @peak TORQUE
MSZXL05.2RXA	4HK1XDRAB-01	AR-4HK1X	172.2 @ 2000 (128.4 kW)	131.8	58.6	494 @ 1600 (670Nm)	142.1	50.6
MSZXL05.2RXA	4HK1XDRAB-02	AR-4HK1X	166.3 @ 1800 (124 kW)	139.5	55.8	494 @ 1600 (670Nm)	142.1	50.6

ENGINE FAMILY	ENGINE CODE	ENGINE MODEL	EMISSION CONTROL DEVICE Per SAE J1930
MSZXL05.2RXA	4HK1XDRAB-01	AR-4HK1X	ECM, TC, CAC, DFI, EGR, DOC, SCR-U, AMOX
MSZXL05.2RXA	4HK1XDRAB-02	AR-4HK1X	ECM, TC, CAC, DFI, EGR, DOC, SCR-U, AMOX