

LIEBHERR MACHINES BULLE SA

EXECUTIVE ORDER U-R-018-0187

New Off-Road Compression-Ignition Engines Page 1 of 1

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	MLHAL24.2VQT	16.162, 24.243	Diesel	8000			
SPECIAL	FEATURES & EMISSION (ONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION				
Electi Injecti	Turbocharger, Charge Aronic Control Module, Eon, Selective Catalyst Fia Oxidation Catalyst, D	lectronic Direct Reduction-Urea,	Crane, Dozer, Agricultural Machinery				

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	R STANDARD		EXHAUST (g/kw-hr)				OPACITY (%)			
POWER CLASS			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	0.01	2.4		0.3	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 9th day of February 2021.

Allen Lyons, Chief

Emissions Certification and Compliance Division

EO #: U-R-018-0187 **Attachment: Engine Models** Family: MLHAL24.2VQT Attachment Revised: 12/30/2020 Displacement -Peak Power -Peak Power -Peak Power -Peak Power -Peak Torque -Peak Torque -Peak Torque -Peak Torque -Config Fueling Peak Torque Model Code Trim Displacement Units Peak Power Units Speed (rpm) **Fuel Units** Units Speed (rpm) Fuel **Fuel Units** OBD GHG Special Notes D9508 A7- V08MQ N/A 1600 290 V8 16.162 Liters 885 2100 325 lb/hr 2768 lb-ft lb/hr N/A N/A horsepower N/A N/A 04 7201 D9508 A7- V08MQ 04 7103 N/A V8 16.162 Liters 764 horsepower 2100 262 lb/hr 2581 lb-ft 1400 229 lb/hr N/A N/A N/A N/A D9512 A7- V12MQ 04 7201 N/A lb-ft V12 24.243 Liters 1234 horsepower 2100 452 lb/hr 4261 1500 403 lb/hr N/A N/A N/A N/A D9512 A7- V12MQ 05 7101 N/A V12 24.243 Liters 1006 horsepower 2000 343 lb/hr 4775 lb-ft 1500 322 lb/hr N/A N/A N/A N/A D9512 A7- V12MQ N/A V12 24.243 Liters 758 horsepower 2000 261 lb/hr 3578 lb-ft 1500 241 lb/hr N/A N/A N/A N/A 7102 D9512 A7- V12MQ N/A V12 24.243 Liters 1140 horsepower 2100 395 lb/hr 5299 lb-ft 1400 328 lb/hr N/A N/A N/A N/A 7103