

LIEBHERR MACHINES BULLE SA

EXECUTIVE ORDER U-R-018-0184

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	MLHAL12.0SQC	12.0	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, Loader, Dozer, Harvester				

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	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
POWER CLASS		_	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
		CERT	0.02	0.34		0.5	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

Attachment: Engine Models EO #: U-R-018-0184 Family: MLHAL12.0SQC Attachment Revised: 12/30/2020 Peak Power -Peak Power -Peak Torque -Displacement -Peak Power -Peak Power -Peak Torque -Peak Torque -Peak Torque -Fueling Model Code Trim Displacement Units Units **Fuel Units Peak Torque** Units Speed (rpm) **Fuel Units** OBD GHG Config **Peak Power** Speed (rpm) Fuel Special Notes D946 A7- R06KQ7 N/A 536 1350 154 N/A 16 12.0 Liters horsepower 1900 183 lb/hr 1860 lb-ft lb/hr N/A N/A N/A 04 104 D946 A7- R06KQ7 N/A 16 12.0 Liters 469 1900 lb/hr 1831 lb-ft 1350 152 lb/hr N/A N/A N/A N/A horsepower 161 04 103 D946 A7- R06KQ7 N/A 16 12.0 Liters 442 horsepower 1900 151 lb/hr 1727 lb-ft 1350 143 lb/hr N/A N/A N/A N/A 04 102 D946 A7- R06KQ7 N/A 16 12.0 Liters 442 horsepower 1900 150 lb/hr 1727 lb-ft 1350 144 lb/hr N/A N/A N/A N/A 24 105 D956 A7-R06NQ7 N/A 04 16 12.0 536 2100 195 lb/hr 1861 lb-ft 1400 163 N/A Liters horsepower lb/hr N/A N/A N/A TCD 12.0 105 L6 D956 A7-R06NQ7 N/A 04 16 12.0 510 2100 181 lb/hr 1861 lb-ft 1400 161 lb/hr N/A N/A N/A Liters horsepower N/A TCD 12.0 107 L6 D956 A7-R06NQ7 N/A 04 16 12.0 Liters 456 horsepower 2100 167 lb/hr 1710 lb-ft 1400 149 lb/hr N/A N/A N/A N/A TCD 12.0 103 L6 D956 A7-04 R06NQ7 16 12.0 Liters 402 horsepower 2100 144 lb/hr 1509 lb-ft 1400 133 lb/hr N/A N/A N/A N/A TCD 12.0 106 L6 D956 A7- R06NQ7 N/A 16 12.0 Liters 459 horsepower 2100 174 lb/hr 1674 lb-ft 1400 156 lb/hr N/A N/A N/A N/A 04 104 D956 A7- R06NQ7 N/A 16 12.0 355 2100 136 lb/hr 1556 lb-ft 1400 136 lb/hr N/A N/A N/A N/A Liters horsepower 04 108