



LIEBHERR MACHINES BULLE SA

EXECUTIVE ORDER U-R-018-0106  
New Off-Road  
Compression-Ignition Engines

Pursuant to the authority vested in the 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-02-003;

**IT IS ORDERED AND RESOLVED:** That the following compression-ignition engine and emission control system 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)
2010	ALHAL24.2VCE	16.2	Diesel	8,000
SPECIAL FEATURES & EMISSION CONTROL SYSTEMS			TYPICAL EQUIPMENT APPLICATION	
Electronic Direct Injection, Turbocharger, Charge Air Cooler, Electronic Control Module, Smoke Puff Limiter, Exhaust Gas Recirculation			Crane, Loader, Dozer, Compressor	

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), 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 (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
225 ≤ kW < 450	Tier 3	STD	N/A	N/A	4.0	3.5	0.20	20	15	50
450 ≤ kW ≤ 560	Tier 3	STD	N/A	N/A	4.0	3.5	0.20	20	15	50
		CERT	--	--	3.8	0.9	0.16	11	10	17

**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 26 day of January 2010.

Annette Hebert, Chief  
Mobile Source Operations Division

ATTACHMENT  
**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
ALHAL24.2VCE	NA	D9508 V08M71013	673@1900	287@673	NA	2217@1500	330@2217	NA	TC, RPM, SPL, CAC, IAT, ECM, ECT, MAP, EGR, DDI
ALHAL24.2VCE	NA	D9508 V08M71008	606@1900	260@606	NA	2102@1500	310@2102	NA	TC, RPM, SPL, CAC, IAT, ECM, ECT, MAP, EGR, DDI
ALHAL24.2VCE	NA	D9508 V08M71015	539@1900	231@539	NA	1878@1500	277@1878	NA	TC, RPM, SPL, CAC, IAT, ECM, ECT, MAP, EGR, DDI
ALHAL24.2VCE	NA	D9508 V08M71017	485@1900	202@485	NA	1672@1500	252@1672	NA	TC, RPM, SPL, CAC, IAT, ECM, ECT, MAP, EGR, DDI
ALHAL24.2VCE	NA	D9508 V08M71019	429@1900	184@429	NA	1493@1500	225@1493	NA	TC, RPM, SPL, CAC, IAT, ECM, ECT, MAP, EGR, DDI