CALIFORNIA AIR RESOURCES BOARD	VOLVO CONSTRUCTION EQUIPMENT AB	EXECUTIVE ORDER U-R-003-0086 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-14-012;

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)
2018	JVSXL16.1HPE	16.1	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Electronic Direct Injection, Turbocharger, Charge Air Cooler, Electronic Control Module, Smoke Puff Limiter, Exhaust Gas Recirculation, Diesel Oxidation Catalyst, Periodic Trap Oxidizer, Selective Catalytic Reduction-Urea, Ammonia Oxidation Catalyst	Loaders, Other Industrial 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
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	0.16	--	0.02	0.003	--	--	--

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 31 day of October 2017.

Annette Hebert, Chief
Emissions Compliance, Automotive Regulations and Science Division

Attachment 1/1

Engine Model Summary Template

U-R_003_0086
9/25/17

Engine Family	1.Engine Code	2.Engine Model	3.kW@RPM (SAE Gross)	4.Fuel Rate: mm^3/stroke @ peak kW (for diesel only)	5.Fuel Rate: (kg/hr) @ peak kW (for diesels only)	6.Torque Nm@ RPM (SEA Gross)	7.Fuel Rate: mm^3/stroke@ peak torque	8.Fuel Rate: (kg/hr)@ peak torque	9.Emission Control Device Per SAE J1930 PTOX AMOX
JVSXL16.1HPE	16-33*)	D16J	495@1900	367 ± 4%	105 ± 4%	3200@1140	452 ± 4%	77 ± 4%	EM,ECM,TC,CAC,EGR,SPL,DDI,DPF,SCR-U,DOC
JVSXL16.1HPE	16-61	D16J	470@1900	342 ± 4%	98 ± 4%	2525@1350	413 ± 4%	87 ± 4%	EM,ECM,TC,CAC,EGR,SPL,DDI,DPF,SCR-U,DOC
JVSXL16.1HPE	16-31	D16J	397@1800	301 ± 4%	83 ± 4%	2550@1400	348 ± 4%	74 ± 4%	EM,ECM,TC,CAC,EGR,SPL,DDI,DPF,SCR-U,DOC

*) test engine