State of California AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-3-6

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

VOLVO CONSTRUCTION EQUIPMENT, VOLVO AB

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 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-45-9;

IT IS ORDERED AND RESOLVED: That the following Volvo Construction Equipment, Volvo AB, 1997 model-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Loaders, Haulers, and Excavators

Fuel Type: Diesel

Engine Family	Liters (Cubic Inches)	Exhaust Emission Control <u>Systems and Special Features</u>
VVS9.6R6DARA (TD102/103)	9.6 (584)	Turbocharger Charge Air Cooler Smoke Puff Limiter

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matters (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

<u>Exhaust</u>	Emissions	(g/bhp-hr)		Smoke C	pacity (%	:_)
THC	<u>co</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
1.0	8.5	6.9	0.4	20	15	50

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

	Exhaust	Emissio	n (g/bh	p-hr)	<u>Smoke (</u>	Dpacity	(%)
Engine Family	THC	<u>co</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	Lug	<u>Peak</u>
VVS9.6R6DARA (TD102/103)	0.3	1.1	6.2	0.1	8	2	18

BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "Emission Control Labels--1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2425 et seq.).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 29th

R. B. Summerfield, Chief

Mobile Source Operations Division

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Manufacturery	OLVO CONSTRUC	TION EQUIPMENT,	VOLVO AB Eng	ine Family v	/VS9.6R6DAR	Δ
Displacement:	9.6 /	Li	ters/Cubic In	ches Ena	Config: I	· -6
All Codes in	Eng Fam: CA_	49S 50S_	XX Cer	t Test Proced	lures: ARB	FDA YY
Valves/Ports	per Cylinder	2	Str	okes per Comb	oustion Cvc	le 4-STPORE
Maximum Rated	Power:	289	HP (216	KW)	1 (0 1)	700 PPM
Ignition: Co	mpression <u>XX</u>	Comp	ression with	Glow Plug		Spark
Fuel Type(s):	Dedicated X	Flex-Fuel	Dual-Fuel	Die	— esel XX Mil	00 M85
	CNG LI	NGLPG	Other (sp	<u>—</u> ≘cifv)	<u> </u>	.0
Diesel Cert F	uel: 40 CFR	86.1313-94 <u>XX</u>	Other (sp	ecify)	·	
Primary Servi	ce Equipment:	Loaders, Hau	lers, Excavato	ors	<u></u>	
Exhaust ECS (e.g., MFI, TC	, CAC):SPL,	TC, CAC			
			(use abbreviat	ions per SAE	J1930 JUN	93)
Engine Model (Eng Code)	Rated HP @ RPM	Fuel Rate @gRated HP mm / stroke	Fuel Pump & Injector Part No.	ECM/PCM Part No.	EGR Valve Part No.	PTOX / Catalytic Converter
TD103 KAE (I)	255 @ 1700	(1bs/hr) 161 (134.2)	11031231 497282	-		Part No.
TD103 KBE (II)	289 @ 1700	148 (123.4)	8188140			
TD103 KCE (III)	251 @ 1700	136 (113.4)	8188141			
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