## State of California AIR RESOURCES BOARD

## EXECUTIVE ORDER U-R-3-7

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

<u>Fuel Type</u>: Diesel

Engine Family	Liters (Cubic Inches)	Exhaust Emission Control Systems and Special Features
VVS16.R6DARA (TD164)	16.1 (980)	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):

Exhaust Emissions (g/bhp-hr)				Smoke (	Opacity ( %	<u> </u>
THC	<u>CO</u>	NOx	<u>PM</u>	<u>Accel</u>	Lug	<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	<u>Emission</u>	(d/p)	<u>hp-hr)</u>	<u>Smoke</u>	Opacity (	<b>%</b> )
<b>Engine Family</b>	THC	<u>co</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	Lug	<u>Peak</u>
VVS16.R6DARA (TD164)	0.2	0.3	6.8	0.1	3	1	7

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 297

R. B. Summerfield, Chief

Mobile Source Operations Division

E.O.# <u>U-R-3</u> -7	
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## 1997 \_ AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET HEAVY-DUTY OFF-ROAD DIESEL ENGINES

Page \_1 of \_Z

Manufacturer <u>V</u>	OLVO CONSTRUCT	ION EQUIPMENT,	VOLVO AB Engi	ine Family_V	VS16.R6DARA	
Displacement:	16.1	<u>' 980</u> L	iters/Cubic In	nches Eng	Config:I	-6
All Codes in	Eng Fam: CA	49S 50S_	<u>XX</u> Ceri	t Test Proced	ures: ARB_	EPA <u>XX</u>
Valves/Ports	per Cylinder_	2	_ Stro	okes per Comb	ustion Cycl	e 4-STROKE
						00 RPM
Ignition: Co	mpression <u>XX</u>	Comp	ression with (	Glow Plug	_	Spark
<pre>Fuel Type(s):</pre>	Dedicated <u>X</u>	Flex-Fuel	Dual-Fuel_	Die	se1 <u>XX</u> M10	0 M85
	CNGLN	IG LPG	Other (spe	ecify)		
Diesel Cert F	uel: 40 CFR 8	36.1313-94 <u>XX</u>	Other (spe	ecify)		
Primary Servi	ce Equipment:	Loaders				
Exhaust ECS (	e.g., MFI, TC,	CAC):SPL,	TC, CAC			
-	_		(use abbrevia	tions per SAE	J1930 JUN9	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 Part No.
TD164 KAE ( I )	496 @ 1800	(1bs/hr) 301 (250.9)	11032038 497773			
Date Issued: Revisions:						