

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-19-47
Relating to Certification of New Off-Road Compression-Ignition Engines

DAEWOO HEAVY INDUSTRIES CO., LTD.

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-45-9;

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:

Model Year: 2001

Typical Equipment Usage: Constant-Speed Generator Set

Fuel Type: Diesel

	Engine		
	Displacement	Useful Life	Emission Control Systems
<u>Engine Family</u>	<u>(liters)</u>	<u>(hours)</u>	<u>and Special Features</u>
1DWXL21.9AYA (P222LE)	21.9	8000	Direct Diesel Injection Turbocharger Charge Air Cooler

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 exhaust emission certification standards and certification values for hydrocarbons (HC), oxides of nitrogen (NOx), or non-methane hydrocarbons plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) (units are expressed in grams per kilowatt-hour (g/kw-hr)), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Section 2423):

Engine Power <u>Rating (kw)</u> KW>560	Emission Standard <u>Category</u> Tier 1	Standard Certification	<u>Exhaust Emissions (g/kw-hr)</u>					<u>Smoke Opacity (%)</u>		
			HC	NOx	NMHC+NOx	CO	PM	Accel	Lug	Peak
			1.3	9.2	N/A	11.4	0.54	N/A	N/A	N/A
			0.1	8.2	--	0.9	0.09	--	--	--

BE IT FURTHER RESOLVED: That the listed engine models also comply with "Emission Control Labels— 1996 and Later Off-Road Compression-Ignition 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, Sections 2425 and 2426).

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

Executed at El Monte, California this 30TH day of April 2001.



R. B. Summerfield, Chief
Mobile Source Operations Division

Engine Model Survey Form

Attachment

ED# U-R-1 47

Manufacturer: **Daewoo Heavy Industries Co Ltd**
 Engine category: **Nonroad CI**
 EPA Engine Family: **1DWXL21.9AYA**
 Mfr Family Name: **P222LE**
 Process Code: **New Submission**

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
	P222LE YOA	771@1500	265	263.2	2702@1500	265	263.2	DDI TC & CAC
	P222LE YOA	714@1500	245	243.3	2502@1500	245	243.3	DDI TC & CAC
	P222LE YOA	635@1500	218	216.5	2225@1500	218	216.5	DDI TC & CAC
	P222LE YOA	871@1800	256	305.1	2546@1800	256	305.1	DDI TC & CAC
	P222LE YOA	792@1800	233	277.7	2315@1800	233	277.7	DDI TC & CAC
	P222LE YOA	720@1800	212	252.7	2105@1800	212	252.7	DDI TC & CAC
	P222LE YGA	771@1500	265	263.2	2702@1500	265	263.2	DDI TC & CAC
	P222LE YGA	714@1500	245	243.3	2502@1500	245	243.3	DDI TC & CAC
	P222LE YGA	635@1500	218	216.5	2225@1500	218	216.5	DDI TC & CAC
	P222LE YGA	871@1800	256	305.1	2546@1800	256	305.1	DDI TC & CAC
	P222LE YGA	792@1800	233	277.7	2315@1800	233	277.7	DDI TC & CAC
	P222LE YGA	720@1800	212	252.7	2105@1800	212	252.7	DDI TC & CAC

EPA cert No: **DNX-NR9-01-12**