State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-19-41
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: Compressor and Generator Set

Fuel Type: Diesel

Engine Family	Engine Displacement (liters)	Useful Life (hours)	Emission Control Systems and Special Features
1DWXL08.1ACN (D1146)	8.1	8000	Direct Diesel Injection

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 Rating (kw)	Emission Standard Category		Exhaust Emissions (g/kw-hr)					Smoke Opacity (%)		
			HC	NOx	NMHC+NOx	CO	PM	Accel	Lug	Peak
37≤KW<130	Tier 1	Standard	N/A	9.2	N/A	N/A	N/A	20	15	50
		Certification	--	6.7	--	--	--	6	9	11

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.

Allen Lyon FOR
R. B. Summerfield, Chief
Mobile Source Operations Division

Engine Model Sur ary Form

Attachment

EO# U-R-19-41

Manufacturer: **Daewoo Heavy Industries & Machinery Ltd.**

Engine category: **Nonroad CI**

EPA Engine Family: **1DWXL0.81ACN**

Mfr Family Name: **D1146**

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	
	D1146CFA	141@2200	73	53.2	341@1600	75	39.7	DOI	~~N/A~~
	D1146CFB	153@2200	82	59.7	428@1600	83	44.0	DOI	~~N/A~~
	D1146CEG	141@2000	83	55.0	428@1500	87	43.2	DOI	~~N/A~~
	D1146CGA	128@1800	83	49.5	N/A	N/A	N/A	DOI	~~N/A~~
	D1146CGA	116@1800	73	43.5	N/A	N/A	N/A	DOI	~~N/A~~
	D1146CGA	109@1500	79	39.2	N/A	N/A	N/A	DOI	~~N/A~~
	D1146CGA	104@1500	76	37.7	N/A	N/A	N/A	DOI	~~N/A~~
	D1146COA	128@1800	83	49.5	N/A	N/A	N/A	DOI	~~N/A~~
	D1146COA	116@1800	73	43.5	N/A	N/A	N/A	DOI	~~N/A~~
	D1146COA	109@1500	79	39.2	N/A	N/A	N/A	DOI	~~N/A~~
	D1146COA	104@1500	76	37.7	N/A	N/A	N/A	DOI	~~N/A~~

EPA cert No: DWX-NRS-01-06