State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-19-48
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 Family	Engine Displacement (liters)	Useful Life (hours)	Emission Control Systems and Special Features
1DWXL18.3ASA (P180LE)	18.3	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 Rating (kw)	Emission Standard Category		Exhaust Emissions (g/kw-hr)					Smoke Opacity (%)		
			HC	NOx	NMHC+NOx	CO	PM	Accel	Lug	Peak
450≤KW≤560	Tier 1	Standard	1.3	9.2	N/A	11.4	0.54	N/A	N/A	N/A
		Certification	0.04	8.2	--	0.8	0.12	--	--	--

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 ıary Form

ED# U-R-19 8

Attachment

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

Engine category: **Nonroad CI**

EPA Engine Family: **1DWXL18.3ASA**

Mfr Family Name: **P180LE**

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
	P180LE SOA	665@1500	278	230.1	2332@ 1500	278	230.1	DDI TC & CAC
	P180LE SOA	724@1800	256	254.3	2116@ 1800	256	254.3	TC & CAC
	P180LE SOA	667@1800	233	231.4	1949@ 1800	233	231.4	TC & CAC
	P180LE SOA	606@1800	211	209.6	1770@ 1800	211	209.6	TC & CAC
	P180LE-1 SOB	668@1800	233	231.4	1952@ 1800	233	231.4	TC & CAC
	P180LE-1 SOB	609@1800	211	209.6	1779@ 1800	211	209.6	TC & CAC
	P180LE SGA	665@1500	278	230.1	2332@ 1500	278	230.1	TC & CAC
	P180LE SGA	724@1800	256	254.3	2116@ 1800	256	254.3	TC & CAC
	P180LE SGA	667@1800	233	231.4	1949@ 1800	233	231.4	TC & CAC
	P180LE SGA	606@1800	211	209.6	1770@ 1800	211	209.6	TC & CAC
	P180LE-1 SGB	668@1800	233	231.4	1952@ 1800	233	231.4	TC & CAC
	P180LE-1 SGB	609@1800	211	209.6	1779@ 1800	211	209.6	TC & CAC

EPA Cert: DWX-NR8-01-13.