California Environmental Protection Agency AIR RESOURCES BOARD	DAEWOO HEAVY INDUSTRIES & MACHINERY LTD.	EXECUTIVE ORDER U-R-019-0055 New Off-Road Compression-Ignition Engines

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 engines and emission control system produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2002	2DWXL08.1ACN	8.1	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Smoke Puff Limiter	Compressor, Generator Set, Industrial Equipment

The engine models and codes are attached.

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

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
75≤ KW < 130	Tier 1	STD	N/A	9.2	N/A	N/A	N/A	20	15	50
		CERT	--	6.7	--	--	--	6	9	11

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

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

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 7TH day of March 2002.

Allen Lyons, Chief
New Vehicle/Engine Programs Branch

EO#4-R-019-- 55

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Engine Model Summary Form

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

Engine category: **Nonroad CI**

EPA Engine Family: **2DWXL08.1ACN**

Mfr Family Name: **D1146**

Process Code: **New Submission**

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross) (1kW)	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	~~N/A~~ DDF, SPL
	D1146CFB 114	153@2200	82	59.7	428@1600	83	44.0	~~N/A~~
	D1146CGA 78	104@1500	76	37.7	N/A	N/A	N/A	~~N/A~~
	D1146CGA	128@1800	83	49.5	N/A	N/A	N/A	~~N/A~~
	D1146CGA	116@1800	73	43.5	N/A	N/A	N/A	~~N/A~~
	D1146CGA	109@1500	79	39.2	N/A	N/A	N/A	~~N/A~~
	D1146COA	104@1500	76	37.7	N/A	N/A	N/A	~~N/A~~
	D1146COA	128@1800	83	49.5	N/A	N/A	N/A	~~N/A~~
	D1146COA	116@1800	73	43.5	N/A	N/A	N/A	~~N/A~~
	D1146COA	109@1500	79	39.2	N/A	N/A	N/A	~~N/A~~
*	D1146CEG	141@2000	83	55.1	428@1500	87	43.2	~~N/A~~

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