KUKJE MACHINERY CO.

EXECUTIVE ORDER U-R-046-0066 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-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems 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)			
2012	CKMCL2.28A41	2.286	Diesel	8,000			
	FEATURES & EMISSION		TYPICAL EQUIPMENT APPLICATION				
lı	ndirect Diesel Injection, T	urbocharger	Crane, Loader, Tractor, Dozer, Pump, Compressor, Other 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):

POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kW-hr)					OPACITY (%)		
			нс	NOx	NMHC+NOx	со	PM	ACCEL	LUG	PEAK
19 ≤ kW < 56	Interim Tier 4	OPTIONAL STD	N/A	N/A	4.7	5.0	0.30	20	15	50
		CERT			4.1	1.5	0.24	8	9	16

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has complied with the more stringent set of standards from the various power categories in conformance with Section 1039.230 (e) of the "California Exhaust Emission Standards and Test Procedures for 2008 and Later Tier 4 Off-Road Compression-Ignition Engines, Part I-C" adopted October 20, 2005.

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 _____ day of December 2011.

Annette Hebert, Chief

Mobile Source Operations Division

Engine Model Summary Form

U-R-046-00E6

Manufacturer:

Kukje Machinery Co., EPA Mnfr:1700

Engine category:

Nonroad CI

EPA Engine Family: CKMCL2.28A41

Mfr Family Name: A2300T1

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_l	9.Emission Control Device Per SAE J1930
N/A	A2300T1	60@2800	39.4	24.8	134.2@1600	44.7	16.1	IDI,EM,TC
N/A	A2300T2	55@2600	40.7	23.5	132.4@1600	45.7	16.2	IDI,EM,TC
N/A	A2300T3	55@2600	40.7	23.5	132.4@1600	45.7	16.2	IDI,EM,TC
N/A	A2300T-Gen1	48@1800	47.5	18.8	N/A	N/A	N/A	IDI,EM,TC
N/A	A2300T-Gen2	38.5@1500	47.8	15.8	NA	NA	NA	IDI,EM,TC
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