

## MITSUBISHI HEAVY INDUSTRIES, LTD.

EXECUTIVE ORDER U-R-035-0181 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 engine 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)			
2006	6MVXL02.3CCC	2.3	Diesel	5000			
	FEATURES & EMISSION		TYPICAL EQUIPMENT APPLICATION				
	Indirect Diesel Inje	ection	Tractor and Industrial Equipment				
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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	СО	PM	ACCEL	LUG	PEAK	
19 <u>&lt;</u> KW < 37	Tier 2	STD	N/A	N/A	7.5	5.5	0.60	20	15	50	
		CERT			4.2	2.1	0.34	5	3	10	

**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 2005.

Allen Lyons, Chief

Mobile Source Operations Division

## ATTACHMENT 1 OF 1

## **Engine Model Summary Form**

Mitsubishi Heavy Industries, Ltd. Manufacturer:

Engine category: Nonroad CI
EPA Engine Family: 6MVXL02.3CCC

Mfr Family Name: K4N

W-R-035-0181

Process Code:

**New Submission** 

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8.Fuel Rate: 9.Emission Control (lbs/hr)@peak torque Device Per SAE J1930	IQI	IQI	ΙQΙ	۵	ΙΩΙ	Ō	Ō	ΙΩ	Ū	ū	
8.Fuel Rate: (lbs/hr)@peak torque	12.6	13.2	13.2	13.2	14.0	14.0	13.2	13.2	13.2	10.8	14.0
7.Fuel Rate: mm/stroke@peak torque	36.0	33.5	33.5	33.5	35.5	35.5	33.5	33.5	33.5	35	35.5
6.Torque @ RPM (SEA Gross)	106.3@1600	103.4@1800	99.8@1800	99.8@1800	104.9@1800	104.9@1800	99.8@1800	103.4ftlb@1800	99.8ftlb@1800	101.3ftlb@1400	104.9ftlb@1800
5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	19.6	16.2	181	18.1	17.8	17.8	18.1	16.9	18.8	15.2	17.8
4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	34.4	33.5	33	33	33.7	33.7	33	33.5	33	34.5	33.7
3.BHP@RPM (SAE Gross)	46.4@2600	40.9@2200	44.4@2500	44.4@2500	43.7@2400	43.7@2400	44.4@2500	42.1HP@2300	46.4HP@2600	38.0HP@2000	43.7HP@2400
2.Engine Model	K4N	K4N	K4N	K4N	K4N	K4N	K4N	K4N	K4N	K4N	K4N
1.Engine Code	K4N-Y2B	K4N 30.5kW-01	K4N 33.1kW-01	K4N 33.1kW-02	K4N-Y231NSA	K4N-Y231NSB	K4N-Y232SCMA	K4N 31.4kW-01	K4N 34.6kW-02	K4N 28.3kW-01	K4N 32.6kW-01