California Environmental Protection Agency AIR RESOURCES BOARD	YANMAR CO., LTD.	EXECUTIVE ORDER U-R-028-0178 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)
2004	4YDXL0.78R3N	0.784	Diesel	3000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Indirect Diesel Injection	Generator Set

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbons (HC), oxides of nitrogen (NOx), or non-methane hydrocarbons 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
8 ≤ kW < 19	Tier 1	STD	N/A	N/A	9.5	6.6	0.80	N/A	N/A	N/A
		CERT	--	--	5.5	4.6	0.41	--	--	--

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 8TH day of December 2003.

Allen Lyons, Chief
Mobile Source Operations Division

Engine Model Summary Form

ATTACHMENT

EO# U-R-28-178

Manufacturer: **Yanmar Co.,Ltd.**

Engine category: **Nonroad CI**

EPA Engine Family: **4YDXL0.78R3N**

Mfr Family Name: **N/A**

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
N/A	3TNE68-ECHC	21.4/3600	16.9	10.0	N/A	N/A	N/A	EM
N/A	3TNE68C-EYA	10.2/1800	14.7	4.3	N/A	N/A	N/A	EM
N/A	3TNE68C-EYA	21.0/3600	16.2	9.6	N/A	N/A	N/A	EM
N/A	3TNE68C-EKM	11.3/1800	16.3	4.8	N/A	N/A	N/A	EM
N/A	3TNE68C-EG1	10.2/1800	14.7	4.3	N/A	N/A	N/A	EM
N/A	3TNE68-EGB2	21.0/3600	16.2	9.6	N/A	N/A	N/A	EM
N/A	3TNE68-EGB2	21.0/3600	16.2	9.6	N/A	N/A	N/A	EM

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Engine Model Summary Form

Manufacturer: **Yanmar Co.,Ltd.**

Engine category: **Nonroad CI**

EPA Engine Family: **4YDXL0.78R3N**

Mfr Family Name:

Process Code: **Running Change**

EO# U-R-028-0178
ATTACHMENT 2 OF 2
R/C #04-01

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
N/A	3TNE68C-ENP	10.2/1800	14.7	4.3	N/A	N/A	N/A	EM
N/A	3TNE68C-EMA	10.2/1800	14.7	4.3	N/A	N/A	N/A	EM