California Environmental Protection Agency AIR RESOURCES BOARD	YANMAR CO., LTD.	EXECUTIVE ORDER U-R-028-0200 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)
2004	4YDXL1.64M3N	1.642	Diesel	5000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection	Crane, Loader, Tractor, Dozer, Pump, Compressor, Excavator

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	20	15	50
19 ≤ kW < 37	Tier 2	STD	N/A	N/A	7.5	5.5	0.60	20	15	50
		CERT	--	--	5.2	3.4	0.29	4	5	5

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 18TH day of December 2003.

Allen Lyons, Chief
Mobile Source Operations Division

Engine Model S[illegible]mary Form

ATTACHMENT

EB #U-R-28-200

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

Engine category: **Nonroad CI**

EPA Engine Family: **4YDXL1.64M3N**

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	3TNV88-VM21	35.0/2800 (26.1 kw)	32.5	15.0	84.8/1500	38.0	9.4	EM
N/A	3TNV88-K	34.7/2800	31.8	14.7	79.9/1200	34.9	6.9	EM
N/A	3TNV88-L	33.5/2700	31.8	14.2	81.5/1200	35.7	7.1	EM
N/A	3TNV88-M	32.3/2600	31.7	13.6	78.2/1100	34.7	6.3	EM
N/A	3TNV88-N	31.1/2500	30.5	12.6	79.6/1300	35.8	7.7	EM
N/A	3TNV88-P	29.8/2400	30.0	11.9	80.9/1200	34.5	6.8	EM
N/A	3TNV88-Q	28.6/2300	30.2	11.5	79.2/1200	34.3	6.8	EM
N/A	3TNV88-S	27.2/2200	29.9	10.9	79.8/1200	34.7	6.9	EM
N/A	3D88E-5M	32.4/2600	31.1	13.4	79.1/1300	34.0	7.3	EM
N/A	3D88E-5N	31.1/2500	30.5	12.6	79.6/1300	35.8	7.7	EM
N/A	3D88E-5P	29.8/2400	30.0	11.9	80.9/1200	34.5	6.8	EM
N/A	3D88E-5Q	28.6/2300	30.2	11.5	79.2/1200	34.3	6.8	EM
N/A	3D88E-5S	27.2/2200	29.9	10.9	79.8/1200	34.7	6.9	DD1 EM
N/A	3IRH8N	34.7/2800	33.0	15.3	79.9/1200	34.7	6.9	EM
N/A	3CE1-K	34.7/2800	31.8	14.7	79.9/1200	34.9	6.9	EM
N/A	3CE1-L	33.5/2700	31.8	14.2	81.5/1200	35.7	7.1	EM
N/A	3CE1-M	32.3/2600	31.7	13.6	78.2/1100	34.7	6.3	EM
N/A	3CE1-N	31.1/2500	30.5	12.6	79.6/1300	35.8	7.7	EM
N/A	3CE1-P	29.8/2400	30.0	11.9	80.9/1200	34.5	6.8	EM
N/A	3CE1-Q	28.6/2300	30.2	11.5	79.2/1200	34.3	6.8	EM
N/A	3CE1-S	27.2/2200	29.9	10.9	79.8/1200	34.7	6.9	EM
N/A	3TNV88-XBV	31.0/2500	31.5	13.0	78.2/1200	35.4	7.0	EM
N/A	3TNV88-XTBZ	28.4/2300	30.8	11.7	78.2/1200	34.7	6.9	EM
N/A	3TNV88-D	37.5/3000	32.5	16.1	81.8/1200	35.5	7.0	EM
N/A	3TNV88-W	24.7/2000	29.6	9.8	81.5/1000	36.5	6.0	EM
N/A	3TNV88-XNKR	32.3/2600	31.1	13.4	79.1/1300	34.0	7.3	EM

Engine Model S mary Form

EO# U-R-28-200
ATTACHMENT
2 of 3

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

Engine category: **Nonroad CI**

EPA Engine Family: **4YDXL1.64M3N**

Mfr Family Name:

Process Code: **Running Change**
MODEL ADDITION

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	D1.6CAE2-SE	27.2	29.9	10.9	78.7/1200	34.7	6.9	EM
	3TNV88-S				78.7/1200			
	3D88E-5S				78.7/1200			
	3CE1-S				78.7/1200			

Engine Model Summary Form

EO# U-R-028-0200
ATTACHMENT 3 OF 3

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

Engine category: **Nonroad CI**

EPA Engine Family: **4YDXL1.64M3N**

Mfr Family Name:

Process Code: **Running Change**
ADDITION OF 2 MODELS

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	3CE1-D	37.5/3000	32.5	16.1	81.8/1200	35.5	7.0	EM
N/A	3CE1-W	24.7/2000	29.6	9.8	81.5/1000	36.5	6.0	EM
N/A	3TNV88-XWL	34.9/2800	31.5	14.6	84.3/1300	36.3	7.8	EM