



California Environmental Protection Agency

AIR RESOURCES BOARD

YANMAR DIESEL ENGINE CO., LTD.

EXECUTIVE ORDER U-R-028-0062New 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 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)
2002	2YDXL1.64D3N	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
19 ≤ KW < 37	Tier 1	STD	N/A	N/A	9.5	5.5	0.80	20	15	50
		CERT	--	--	8.7	3.8	0.58	2	3	4

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 29th day of November 2001.

R. B. Summerfield, Chief
Mobile Source Operations Division

FO U-R-028-0062

ATTACHMENT

Manufacturer: Yanmar Diesel Engine Co., Ltd.
 Engine category: Nonroad CI
 EPA Engine Family: ZYDXL1.64D3N
 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	3TNE88-EDM1	36.7/3000	29.0	14.3	79.2/1800	33.1	9.8	EM DDI
N/A	3TNE88-ESA01	37.6/3000	30.4	15.0	77.5/1800	32.8	9.7	EM
N/A	3TNE88-ECS	37.3/3000	30.2	14.9	77.2/1800	32.8	9.7	EM
N/A	3TNE88-EJT	35.1/2700	31.1	13.8	77.8/1700	33.0	9.2	EM
N/A	3TNE88-EB1	26.8/2200	27.8	10.1	76.7/1400	33.0	7.6	EM
N/A	3TNE88-ETB	28.0/2300	27.8	10.5	76.7/1400	33.0	7.6	EM
N/A	3TNE88-ESA02	37.6/3000	30.4	15.0	77.5/1800	32.8	9.7	EM
N/A	3TNE88-ETB1	28.0/2300	27.8	10.5	76.7/1400	33.0	7.6	EM
N/A	3TNE88-EBVB	30.9/2500	28.2	11.6	76.7/1400	33.0	7.6	EM
N/A	3TNE88-ENSR	30.7/2400	29.2	11.5	78.2/1600	32.8	8.6	EM
N/A	3TNE88-EYE	31.3/2500	28.6	11.8	77.9/1600	32.3	8.5	EM
N/A	3TNE88-EYAS	37.6/3000	30.4	15.0	77.5/1800	32.8	9.7	EM
N/A	3TNE88-EAMM	34.6/2700	30.6	13.6	77.1/1700	32.7	9.1	EM
N/A	3TNE88-EJTS	35.1/2700	31.1	13.8	77.8/1700	33.0	9.2	EM
N/A	3TNE88-EB1A	28.4/2300	28.2	10.7	76.7/1400	33.0	7.6	EM
N/A	3TNE88-EDN	37.4/3000	30.3	15.0	76.9/1800	32.6	9.7	EM
N/A	3TNE88-EBVC	32.0/2500	29.2	12.0	76.7/1400	32.2	7.4	EM
N/A	3TNE88-ELAN	34.4/2800	30.0	13.8	77.5/1800	32.8	9.7	EM
N/A	3TNE88-EMS	38.1/3000	30.8	15.2	77.4/1800	32.8	9.7	EM
N/A	3TNE88-ESA03	37.6/3000	30.4	15.0	77.5/1800	32.8	9.7	EM
N/A	3TNE88-ESA04	37.6/3000	30.4	15.0	77.5/1800	32.8	9.7	EM
N/A	3TNE88-ESA05	37.6/3000	30.4	15.0	77.5/1800	32.8	9.7	EM
N/A	3TNE88-EFW	36.5/3000	29.0	14.3	77.1/1800	32.7	9.7	EM
N/A	3TNE88-ECB	37.6/3000	30.4	15.0	77.5/1800	32.8	9.7	EM
N/A	3TNE88-ECR	35.1/3000	28.6	14.1	74.2/1800	30.9	9.2	EM
N/A	3TNE88-EJT441	34.9/2600	32.1	13.7	77.8/1700	33.0	9.2	EM

Engine Model Summary Form

EO U-R-028-0062

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Manufacturer: Yanmar Diesel Engine Co., Ltd.
 Engine category: Nonroad CI
 EPA Engine Family: 2YDXL1.64D3N
 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	3TNE88-EJMA	36.3/3000	28.9	14.3	76.3/1800	32.3	9.6	EM DD1