

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-28-10  
Relating to Certification of New Off-Road Compression-Ignition Equipment Engines

YANMAR DIESEL ENGINE CO., LTD.

Pursuant to the authority vested in the Air Resources Board (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 exhaust emission control system produced by the manufacturer are certified as described below for use in off-road equipment:

Model Year: 2001

Typical Equipment Usage: Crane, Loader, Tractor, Dozer, Pump, Compressor and Other Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	<u>Engine Displacements (liters)</u>	<u>Durability Period (Hours)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
1YDXL0.78P3N	0.784	3000	Indirect Diesel Injection

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The exhaust emission certification standards and certification values for non-methane hydrocarbons plus oxides of nitrogen (NMHC+NO<sub>x</sub>), carbon monoxide (CO), and particulate matter (PM) (units are expressed in grams per kilowatt-hour (g/kw-hr)), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Sections 2423(b)(1) and 2423(b)(3)(B), as amended by Board approval on January 28, 2000):

<u>Engine Power Rating (kw)</u>	<u>Emission Standard Category</u>		<u>Exhaust Emissions (g/kw-hr)</u>			<u>Smoke Opacity (%)</u>		
			<u>NMHC+NO<sub>x</sub></u>	<u>CO</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
8≤KW< 19	Tier 1	Standard	9.5	6.6	0.80	20	15	50
		Certification	4.8	3.1	0.43	2	6	7

BE IT FURTHER RESOLVED: That, at the request of the manufacturer, the listed engine models are **conditionally certified** to, and shall be required to comply with, all amendments to Title 13, California Code of Regulations, Sections 2420 through 2427 adopted by the Board on January 28, 2000 at its hearing "TO CONSIDER AMENDMENTS TO OFF-ROAD COMPRESSION-IGNITION ENGINE REGULATIONS: 2000 AND LATER EMISSION STANDARDS, COMPLIANCE REQUIREMENTS AND TEST PROCEDURES." The listed engine models comply with all such amendments, including, but not limited to:

- the amended "Emission Control Labels—1996 and Later Off-Road Compression-Ignition Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model-year;
- the Board's amended emission control system warranty provisions (Title 13, California Code of Regulations, Sections 2425 and 2426) for the listed engine models, as demonstrated by materials submitted by the manufacturer; and
- new California requirements for the Selective Enforcement Audit (SEA) for the listed engine models, as demonstrated by the manufacturer's submission of materials.

BE IT FURTHER RESOLVED: That the conditional certification described in the paragraph above is conditioned on the amendments being approved by the California Office of Administrative Law (OAL) pursuant to Government Code Section 11349.3, and where necessary, authorized by the Administrator of the U. S. Environmental Protection Agency (U.S. EPA) pursuant to Section 209(e)(2) of the Federal Clean Air Act. In the event that the OAL disapproves the amendments or the U.S. EPA decides not to authorize them, the Air Resources Board shall notify the manufacturer that the listed engine models must comply with the "California Exhaust Emission Standards and Test Procedures for 1995 and Later Small Off-Road Engines" (Title 13, California Code of Regulations, Sections 2400 through 2409) last amended on March 23, 1999, as applicable. Failure to demonstrate compliance within 45 days after notification by the Air Resources Board shall be cause for the Board to revoke the Executive Order and deem the listed engine models uncertified.

The conditional certification described herein is not conditioned on further U.S. EPA action on amendments determined by the Board to be within the scope of an existing U.S. EPA authorization.

Engines certified under this Executive Order must conform to the above requirements under Title 13, California Code of Regulations, Chapter 9, Article 4, and all other applicable California emission laws and regulations.

Executed at El Monte, California this 29<sup>th</sup> day of November 2000.



R. B. Summerfield, Chief  
Mobile Source Operations Division

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Engine Model Summary Form

Manufacturer: Yanmar Diesel Engine Co.,Ltd.  
Engine category: Nonroad CI  
EPA Engine Family: 1YDXL0.78P3N  
Mfr Family Name: N/A  
Process Code: New Submission

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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-EVHV	22.0/3600	17.6	10.4	36.0/2600	18.1	7.8	EM
N/A	3TNE68L-EUB	11.5/2000	15.7	5.2	35.1/1600	17.6	4.6	EM
N/A	3TNE68L-EUB	11.6/2000	15.8	5.2	35.2/1600	17.6	4.6	EM
N/A	3TNE68-ETB1	12.3/2100	15.9	5.5	34.8/1700	17.5	4.9	EM
N/A	3TNE68-ETBZ	12.3/2100	15.9	5.5	34.8/1700	17.5	4.9	EM
N/A	3TNE68L-EUB	13.2/2250	15.9	5.9	35.1/1600	17.6	4.6	EM
N/A	3D68-N3FAE	14.6/2450	16.2	6.5	34.8/1800	17.4	5.2	EM
N/A	3TNE68-ENSR	12.9/2200	15.9	5.8	34.7/1800	17.4	5.2	EM
N/A	3TNE68-ENBV	15.1/2600	15.8	6.8	33.4/2100	16.7	5.8	EM
N/A	3D68-N3FBE	15.9/2600	16.6	7.1	34.7/1800	17.4	5.2	EM
N/A	3TNE68-ELG4	17.3/3000	15.6	7.7	32.9/2250	16.5	6.1	EM
N/A	3TNE68-EAC	23.0/3600	18.2	10.8	35.7/2700	17.9	8.0	EM
N/A	3TNE68C-EJT	18.1/3200	15.4	8.1	32.0/2700	16.1	7.1	EM
N/A	3TNE68-EYB	11.9/2000	16.1	5.3	35.9/1500	18.0	4.4	EM
N/A	3TNE68C-EYA	17.8/3000	16.1	7.9	35.2/2250	17.7	6.5	EM
N/A	3TNE68C-EYA	20.2/3600	15.2	9.0	32.8/2500	16.4	6.8	EM
N/A	3D68E-3GB	14.1/2450	15.6	6.3	33.2/1800	16.7	4.9	EM
N/A	3D68E-3HB	15.8/2600	16.5	7.1	34.2/1800	17.2	5.1	EM
N/A	3TNE68-ENBA	15.4/2600	16.1	6.9	34.7/1800	17.4	5.2	EM
N/A	3TNE68C-ENJ	17.1/3000	15.5	7.6	32.1/2300	16.1	6.1	EM
N/A	3TNE68-EYE	14.6/2500	15.8	6.5	33.2/1800	16.6	4.9	EM
N/A	3D68E-3KB	15.7/2600	16.4	7.0	33.1/1800	16.6	4.9	EM
N/A	3D68E-3KJ	15.7/2600	16.4	7.0	33.4/1800	16.7	5.0	EM
N/A	3D68E-3FB	17.5/2750	17.2	7.8	35.8/2100	17.9	6.2	EM
N/A	3TNE68C-ESA	17.8/3000	16.1	7.9	35.2/2250	17.7	6.5	EM
N/A	3TNE68-EBE	16.5/2800	16.3	7.5	35.8/2100	17.9	6.2	EM

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