California Environmental Protection Agency AIR RESOURCES BOARD	YANMAR CO., LTD.	EXECUTIVE ORDER U-R-028-0528 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)
2011	BYDXL2.19K4N	2.19	Diesel	5,000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Mechanical Direct Injection, Electronic Control Unit (Models 3NNKAE, 3NNDAE)	Crane, Loader, Tractor, Dozer, Pump, Compressor, Other Industrial Equipment

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	CO	PM	ACCEL	LUG	PEAK
19 ≤ kW < 37	Tier 4 - Interim	STD	N/A	N/A	7.5	5.5	0.30	20	15	50
		CERT	--	--	6.4	2.8	0.20	1	2	2

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 20 day of October 2010.

Annette Hebert, Chief
Mobile Source Operations Division

U-R-028-0528

10/5/10

Engine Model Summary Template

ATTACHMENT

Engine Family	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
BYDXL2.19K4N	N/A	3NNDP	48.8/3000	29.2	19.3	107.6/1000	35.2	7.8	EM DFI
BYDXL2.19K4N	N/A	3NNDA	48.8/3000	29.2	19.3	106.2/1000	33.0	7.3	EM DFI
BYDXL2.19K4N	N/A	3NNKA	47.0/2800	29.0	17.9	106.9/1100	33.7	8.2	EM DFI
BYDXL2.19K4N	N/A	3NNLA	45.3/2700	28.8	17.1	107.0/1000	34.5	7.6	EM DFI
BYDXL2.19K4N	N/A	3NNMA	43.6/2600	29.4	16.9	107.0/1200	34.3	9.1	EM DFI
BYDXL2.19K4N	N/A	3NNNA	42.0/2500	29.3	16.2	107.1/1000	34.8	7.7	EM DFI
BYDXL2.19K4N	N/A	3NNPA	40.2/2400	28.6	15.1	106.0/1100	34.0	8.2	EM DFI
BYDXL2.19K4N	N/A	3NNQA	38.6/2300	28.4	14.4	107.0/1000	34.7	7.6	EM DFI
BYDXL2.19K4N	N/A	3NNSA	37.0/2200	28.2	13.7	107.0/1000	34.7	7.6	EM DFI
BYDXL2.19K4N	N/A	3NNVA	35.3/2100	28.3	13.1	107.0/1000	34.7	7.7	EM DFI
BYDXL2.19K4N	N/A	3NNWA	33.6/2000	28.5	12.6	105.9/1000	34.6	7.6	EM DFI
BYDXL2.19K4N	N/A	3NNPE	41.1/2400	29.9	15.8	106.0/1100	34.0	8.2	EM DFI
BYDXL2.19K4N	N/A	3NNKC	42.8/2800	27.3	16.8	95.1/1600	29.1	10.3	EM DFI
BYDXL2.19K4N	N/A	3NNLC	41.3/2700	26.8	15.9	94.81500	29.1	9.6	EM DFI
BYDXL2.19K4N	N/A	3NNKAE	47.0/2800	29.0	17.9	106.9/1100	33.7	8.2	EC EM DFI
BYDXL2.19K4N	N/A	3NNDAE	48.8/3000	29.2	19.3	106.2/1000	33.0	7.3	EC EM DFI
BYDXL2.19K4N	N/A	3NNKAN	47.0/2800	29.0	17.9	106.9/1100	33.7	8.2	EM DFI
BYDXL2.19K4N	N/A	3NNPAN	40.2/2400	28.6	15.1	106.0/1100	34.0	8.2	EM DFI