

IHI SHIBAURA MACHINERY CORPORATION

EXECUTIVE ORDER U-R-026-0433 New Off-Road Compression-Ignition Engines Page 1 of 2

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-14-012;

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)
2016	GH3XN2.22NLC	2.216	Diesel	5000
	FEATURES & EMISSION	CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLIC	ATION
	Indirect Diesel Inje	ction	Auxiliary Marine Engine	Э

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	EMISSION			EX	HAUST (g/kw-h	r)		OF	PACITY (%	o)
POWER CLASS	STANDARD CATEGORY		NMHC	NOx	NMHC+NOx	СО	PM	ACCEL	LUG	PEAK
19 <u><</u> kW < 37	Interim Tier 4	STD	N/A	N/A	7.5	5.5	0.30	N/A	N/A	N/A
•		CERT	N/A	N/A	5.2	1.1	0.16			

BE IT FURTHER RESOLVED: That certification to the standards in 13 CCR 2423(b)(1)(B)-Table 1b listed above has been permitted to Endnote 1 of the same table.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has voluntarily complied with the more stringent set of standards from 13 CCR, Section 2423 Table1b, and are certified for use in marine engine applications.

BE IT FURTHER RESOLVED: The listed engine models are conditionally certified subject to the following. If within 90 days from the date of this conditional certification the manufacturer does not have approval from the Executive Officer for the smoke set bolt's tamper resistance method, the conditional Executive Order shall be revoked and voided ab initio. Engines sold under the revoked conditional certification shall be deemed uncertified and subject to a civil penalty of up to \$5000 per engine pursuant to HSC Section 43154.

BE IT FURTHER RESOLVED: That the manufacturer shall maintain a record of engines produced and introduced into commerce in California under the conditional Executive Order. The manufacturer shall install on these engines, free of any charge to engine owners, the approved, modified smoke set bolt by November 30, 2016. Any engine without the approved, modified bolt shall be reported to ARB by December 31, 2016 for remedial action by the manufacturer under Title 13, California Code of Regulations, Section 2123 et al.

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).

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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 _

day of December 2015.

Annette Hebert, Chief

Emissions Compliance, Automotive Regulations and Science Division

12/24/2015

Engine Family	1.Engine Code	Engine Family 1.Engine Code 2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	4.Fuel Rate: 5.Fuel Rate: Stroke @ peak HP (lbs/hr) @ peak HP 6.Torque @ RPM (for diesel only) (SEA Gross)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torgue	8.Fuel Rate: (lbs/hr)@peak torque	8.Fuel Rate: 9.Emission Control (lbs/hr)@peak torqueDevice Per SAE J1930
GH3XN2.22NLC	404D-22	GN28/1500C	27.6@1500	34.0	11.2	N/A	N/A	N/A	IQI
GH3XN2.22NLC	404D-22	GN33/1800C	32.6@1800	32.4	12.8	N/A	N/A	N/A	IOI
GH3XN2.22NLC	C2.2	GN28/1500C	27.6@1500	34.0	11.2	N/A	N/A	N/A	IDI
GH3XN2.22NLC	C2.2	GN33/1800C	32.6@1800	32.4	12.8	N/A	N/A	N/A	· IQI
GH3XN2.22NLC	N844L-D	32/1800C	31.5@1800	31.3	12.4	N/A	N/A	N/A	IDI