California Environmental Protection Agency D Air Resources Board

IHI SHIBAURA MACHINERY CORPORATION

EXECUTIVE ORDER U-R-026-0438-1 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-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)				
2016	GH3XL1.13F2C	1.131	Diesel	3000		
	FEATURES & EMISSION		TYPICAL EQUIPMENT APPLICATION			
Engine C	Indirect Diesel Inje ontrol Module [Engine C	ction, ode S311-18C only]	Generator			

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for non-methane hydrocarbon (NMHC), 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):

POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)				OPACITY (%)			
			NMHC	NOx	NMHC+NOx	СО	PM	ACCEL	LUG	PEAK
8 <kw<19< td=""><td>Tier 4 Final</td><td>STD</td><td>N/A</td><td>N/A</td><td>7.5</td><td>6.6</td><td>0.40</td><td>N/A</td><td>N/A</td><td>N/A</td></kw<19<>	Tier 4 Final	STD	N/A	N/A	7.5	6.6	0.40	N/A	N/A	N/A
		CERT			5.6	1.8	0.24			

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.

This Executive Order hereby supersedes Executive Order U-R-026-0438 dated December 30, 2015

Executed at El Monte, California on this

_ day April 2016.

Annette Hebert, Chief

Emissions Compliance, Automotive Regulations and Science Division

ATTACHMENT 1 OF 1

Engine Model Summary Template

U-R-026-0438-1

R/C 3/23/2016

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		9.Emission Control eDevice Per SAE J1930
GH3XL1.13F2C	EJ14/1800C	403F-11	13.8@1800	19.3	5.7	N/A	N/A	N/A	FI
GH3XL1.13F2C	EJ14/1800C	C1.1	13.8@1800	19.3	5.7	N/A	N/A	N/A	IFI
GH3XL1.13F2C	S311-18C	S773L-F	15.0@1800	22.0	6.5	N/A	N/A	N/A	IFI, ECM
GH3XL1.13F2C	S310-18C	S773L-F	13.8@1800	19.3	5.7	N/A	N/A	N/A	
GH3XL1.13F2C	EJ13/1800C	403F-11	13.1@1800	18.7	5.7	N/A	N/A	N/A	IFI
GH3XL1.13F2C	EJ13/1800C	C1.1	13.1@1800	18.7	5.7	N/A	N/A	N/A	IFI