

## DOOSAN INFRACORE CO., LTD.

EXECUTIVE ORDER U-R-019-0170 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in California 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-19-095;

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)		
2020	LDICL03.4LED	3.4	Diesel	8000		
SPECIAL	FEATURES & EMISSION (		TYPICAL EQUIPMENT APPLICATION			
Diesel Oxidation Catalyst, Selective Catalyst Reduction-Urea, Electronic Direct Injection, Turbocharger, Charge Air Cooler, Electric Control Module, DEF Quality Sensor			Crane, Loader, Tractor, Dozer, Pump, Compressor, Generator Set, Excavator, Forklift			

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):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kW-hr)					OPACITY (%)		
			NMHC	NOx	NMHC+NOx	co	PM	ACCEL	LUG	PEAK
56 ≤ kW < 130	Tier 4 Final	OPTIONAL STD	0.19	0.40	N/A	5.0	0.02	N/A	N/A	N/A
		CERT	0.03	0.22		0.03	0.02			

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).

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has complied with the more stringent set of standards from the various power categories in conformance with Section 1039.230 (e) of the "California Exhaust Emission Standards and Test Procedures for New 2011 and Later Tier 4 Off-Road Compression Ignition Engines, Part 1-D" adopted October 20, 2005 and last amended October 25, 2012.

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 August 2019.

Allen Lyons, Chief

Emissions Certification and Compliance Division

## ATTACHMENT 1 OF 1

## Engine Model Summary Template

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Engine Family	1.Engine Code	2.Engine Model	3.kW@RPM n (SAE Gross)	4.Fuel Rate: nm/stroke @ peak kW (for diesel only)	5.Fuel Rate: (kg/hr) @ peak kW (for diesels only)	/ 6.Torque Nm@ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (kg/hr)@peak torque	9.Emission Control Device Per SAE J1930
LDICL03.4LED	DM03-LEL05	DM03PA	100.7@2600	85.3	22.4	550@1400	117.6	16.6	DOC, SCR-U, DFI, TC, CAC, ECM, DQS
LDICL03.4LED	DM03-LEP00	DM03PA	100.7@2600	85.3	22.4	500@1400	105.0	14.8	DOC, SCR-U, DFI, TC, CAC, ECM, DQS
LDICL03.4LED	DM03-LEP01	DM03PA	85.8@2600	75.3	19.2	445@1600	96.3	15.5	DOC, SCR-U, DFI, TC, CAC, ECM, DQS
LDICL03.4LED	DM03-LEP02	DM03PA	78.3@2600	67.4	17.7	407@1600	87.1	14.0	DOC, SCR-U, DFI, TC, CAC, ECM, DQS
LDICL03.4LED	DM03-LEP03	DM03PA	71.6@2600	62.4	16.3	372@1600	78.7	12.7	DOC, SCR-U, DFI, TC, CAC, ECM, DQS
LDICL03.4LED	DM03-LEG00	DM03PP	92.4@1800	104.8	19.0	490@1800	104.8	19.0	DOC, SCR-U, DFI, TC, CAC, ECM, DQS
LDICL03.4LED	DM03-LEG00	DM03PP	78.1@1500	105.3	15.9	497.5@1500	105.3	15.9	DOC, SCR-U, DFI, TC, CAC, ECM, DQS